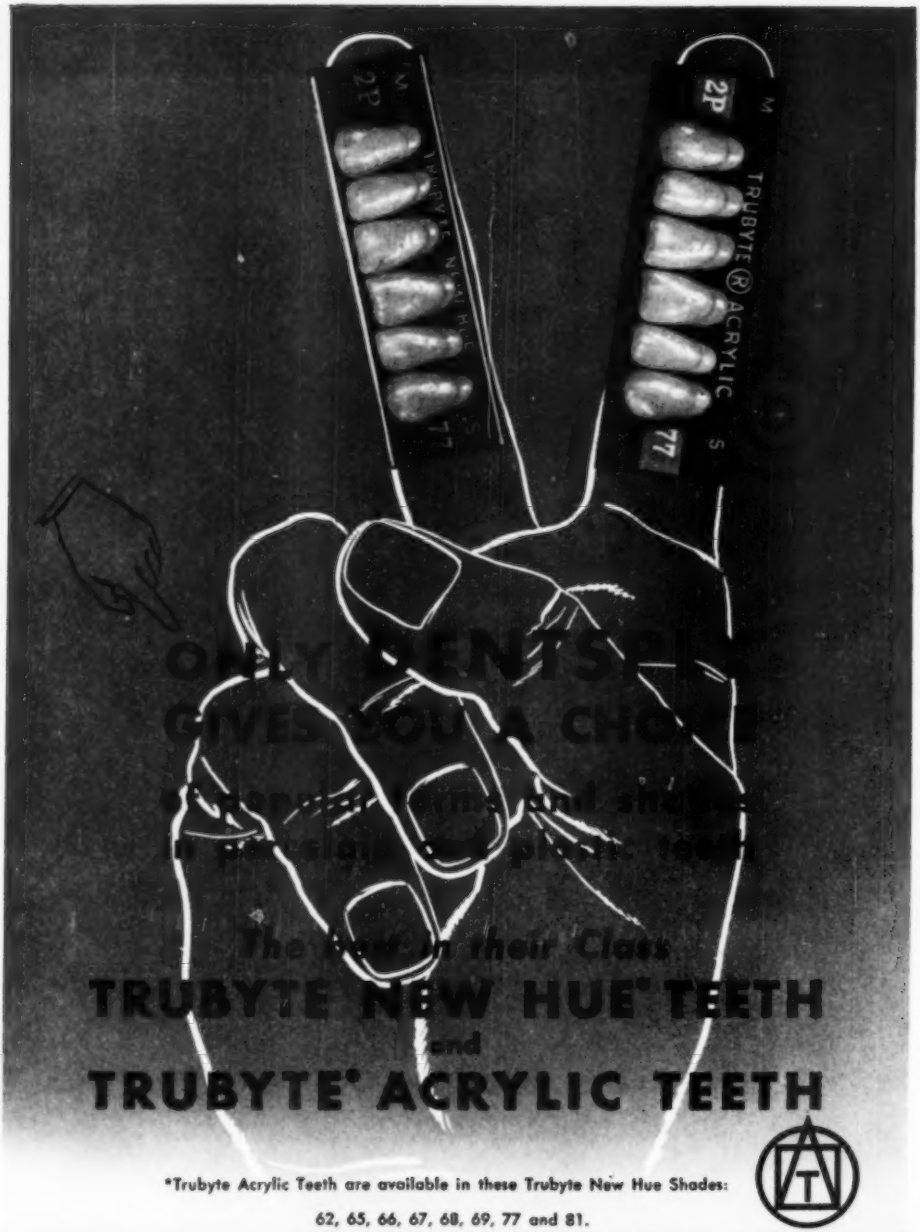
THE Journal

Use of wire and silk ligatures—Hirschfeld. 647
Fractures of the jaw—Mallett. 657
Effect of chromic acid on gingiva of rat—Glickman. 674
Effect of irradiation on the dental system—Bruce. 684
Knife-edge lower ridge—Schermer. 690
Occlusion: a cardinal consideration. 691
Airbrasive—Black. 701
An editor examines the crisis of our time—Canham 711
Editorials. 721
Report of ninety-first annual session. 725
News of dentistry. 725
Washington news letter. 751
Book reviews. 752a
Current literature. 752b
Reports of councils. 757
Deaths. 768
Directory. 770
Announcements. 772


TRUBYTE® ACRYLIC
2P
77
The Best in their Class
TRUBYTE NEW HUE® TEETH
and
TRUBYTE® ACRYLIC TEETH
*Trubyte Acrylic Teeth are available in these Trubyte New Hue Shades:
62, 65, 66, 67, 68, 69, 77 and 81.
THE DENTISTS' SUPPLY COMPANY OF NEW YORK
220 West 42nd Street, New York 18, N.Y.

The Journal of the American Dental Association, Vol. 41, No. 6. Published by the American Dental Association, 222 E. Superior St., Chicago 11, Ill. Yearly subscription $7.00 for U. S. and possessions; $8.00 for foreign countries. Single copy seventy-five cents. Entered as second-class matter, December 31, 1947, at the postoffice at Chicago, Ill., under the act of March 3, 1879. Published monthly. Copyright 1950 by the American Dental Association. The Journal of the American Dental Association is indexed in the Index to Dental Literature and, in part, in the Quarterly Cumulative Index Medicus, Biological Abstracts and Chemical Abstracts.

Compare

BEFORE YOU ORDER IMPRESSION MATERIAL

As evidence of the accuracy and dependability of Deelastic impression material, one of the leading laboratories notified his customers that. . . .

> **"We will assume all responsibility for fitting the mouth on all cases constructed on casts from impressions taken in hydrocolloid such as Deelastic."**

It may take a little longer to use a true hydrocolloid impression material, but it saves time and eliminates costly remakes.

Deelastic is so accurate that it is rapidly becoming a favorite for impressions in indirect inlay technic.

American Dental Association
RELIEF FUND

OFFICE AND PLANT
1900 WEST KINZIE STREET..

HANDY & HARMAN
DEE GOLD
PRECIOUS METALS

REFINERS & MFRS.
.. CHICAGO, 22, ILLINOIS

OUR CANADA OFFICE 141 JOHN ST., TORONTO

TABLETS
BUFFERED
Crystalline
Penicillin G
Potassium

CSC

250,000 UNITS

Prophylactically Following Exodontia

In exodontia, the value of prophylactic penicillin administration to patients with rheumatic heart disease or severe infection is well established. Given before and following extraction, penicillin greatly reduces the incidence of blood-borne infection and minimizes the chances for secondary complications both *in situ* and in distant structures.

Tablets Buffered Penicillin-C.S.C., providing 250,000 units of potassium penicillin G per tablet, are an excellent means of instituting prophylactic therapy. A single tablet 4 to 6 times daily is usually adequate.

The oral administration of penicillin has also been recommended pre- and postoperatively when there is danger of systemic infection following surgery, especially in the case of infected tonsils, periapical abscesses, etc. For this purpose a minimum of 750,000 units should be given during the 24 hours before operation and 500,000 to 1,000,000 units daily in divided doses every 4 hours after operation for 3 or 4 days.

At your prescription pharmacy in boxes of 10 tablets, each tablet individually sealed in foil.

C.S.C. Pharmaceuticals

A DIVISION OF COMMERCIAL SOLVENTS CORPORATION, 17 EAST 42ND STREET, NEW YORK 17, NEW YORK

Put your patients on this

ANTI-NICOTINE DIET

—to help protect teeth and gums!

Recommending a Denicotea Holder is like prescribing an *anti*-nicotine, *anti*-tar diet—without requiring your patient to give up a single cigarette!

Nicotine and tars trapped in the efficient Denicotea crystal filter can't reach the oral cavity—*can't harm gums, can't stain teeth!*

PROFESSIONAL OFFER:
Write for *Denicotea Holder*, $1. postpaid (reg. price $2).

ALFRED DUNHILL, Dept. D
660 Fifth Ave., New York 19

dunhill
DE·NICOTEA
Crystal Filter Cigarette Holder

THE
MEDICAL
PROTECTIVE
COMPANY
FORT WAYNE,
INDIANA

Professional Protection Exclusively since 1899

DENTISTS

D D S

AUTO DISPLAY PLATES

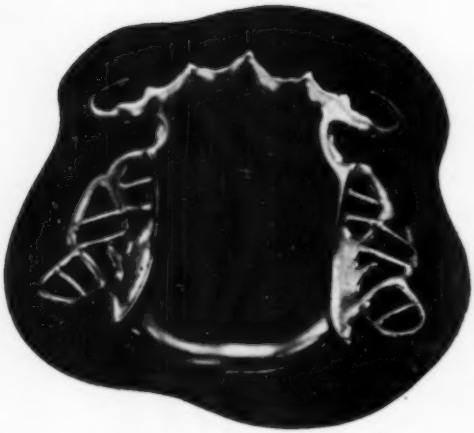
Made of steel; enamel finish. Glossy, durable. Green Caduceus, lettering and border on White field. Size 2¾" x 4¾".

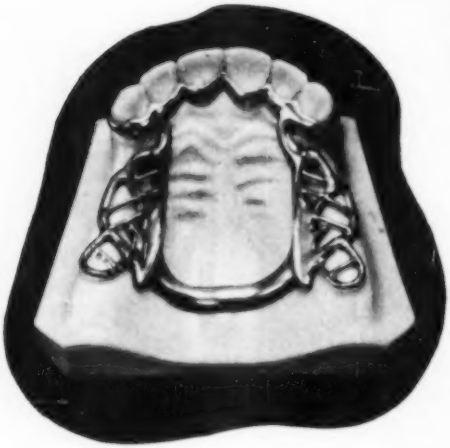
Price: $3.00 Per Pair, postpaid

Satisfaction guaranteed or money cheerfully refunded!

Send today to
CROSS EMBLEM CO.
11 W. 42nd St. (Dept. AD 125)
New York 18, N.Y.

You too Will Be Satisfied with PLATINUM-PALLADIUM-GOLDS





Two kinds of satisfaction go with every well-fitting partial. First, is the physical comfort of the patient. Second, is the mental satisfaction enjoyed by the dentist who has pleased his clients.

Platinum-palladium-golds yield accurate, one-piece castings ...respond readily to finishing operations...permit quick comfort adjustments. All these features contribute to your patient's comfort and your personal satisfaction.

"PLATINUM-PALLADIUM-GOLDS IN DENTISTRY" contains many pages of helpful information. Have you sent for your free copy of this booklet?

Platinum Metals Division
THE INTERNATIONAL NICKEL COMPANY, INC., *67 Wall St., New York 5, N.Y.*

Give faster pain relief with BUFFERIN

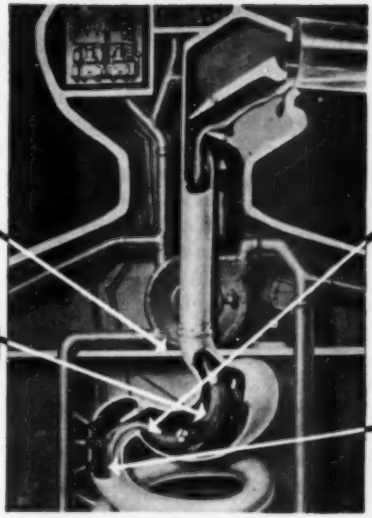
American Dental Association
RELIEF FUND

ACTS TWICE AS FAST AS ASPIRIN

WITHOUT GASTRIC DISTRESS!

1. BUFFERIN enters the stomach here.

2. BUFFERIN exerts its antacid effect, lessening the possibility of gastric distress.



3. BUFFERIN helps dilate the pyloric valve, promptly leaves the stomach.

4. BUFFERIN's analgesic component is absorbed into the blood *twice as fast as aspirin*, relieves pain.

When you prescribe BUFFERIN to your patients you assure *faster relief of pain.* Clinical studies[1] show that within ten minutes after BUFFERIN is ingested, blood salicylate levels are as great as those attained by aspirin in twice this time. That is why BUFFERIN *acts twice as fast as aspirin.*

BUFFERIN has *greater gastric tolerance.* BUFFERIN's antacid ingredients provide protection against the gastric distress so often seen with aspirin.[1] BUFFERIN, therefore, is especially suited for use when prolonged use of salicylates is indicated.

1. Effect of Buffering Agents on Absorption of Acetylsalicylic Acid. J. Am. Pharm. A., Sc. Ed. 39:21, Jan. 1950.

In vials of 12 and 36 and bottles of 100. Scored for divided dosage. Each BUFFERIN tablet contains 5 grains of acetylsalicylic acid with optimal proportions of magnesium carbonate and aluminum glycinate.

BUFFERIN
is a trade-mark of the Bristol-Myers Company

Accepted
COUNCIL on DENTAL THERAPEUTICS
AMERICAN DENTAL ASSOCIATION

A product of BRISTOL-MYERS COMPANY
19 West 50 St., New York 20, N. Y.

Your office Samples of POLIDENT

are awaiting your request, Doctor

More dentists are recommending Polident to their patients (according to independent surveys) than any other denture cleanser... and so many of them find samples of the product indispensable for patient instruction.

If *your* supply of samples is low, use the coupon now for a prompt shipment, all ready awaiting your call. These generous samples make it so easy to explain at the chair how Polident helps those precious new dentures to "keep fit" in all ways... how simply soaking for 15 minutes or overnight enables Polident to dissolve mucin, tarnish and food debris that rinse off under running water... how Polident avoids the harm of abrasive brushing... how it minimizes the danger of breakage through handling.

Is your pen handy? Why not fill in the coupon, and mail it now while you have it in mind?

HUDSON PRODUCTS, INC.
JERSEY CITY 2, N. J.

(Approved for use by leading manufacturers of acrylic denture materials)

1. SOAK

Soak 15 minutes in solution (or overnight) (1 capful POLIDENT to glass water)

2. RINSE

Hold under running water to rinse... THAT'S ALL

HUDSON PRODUCTS, INC., Dept. A-120
Jersey City 2, N. J.

Please send me without charge or obligation a supply of Polident samples for office use.

Dr._____

Address_____

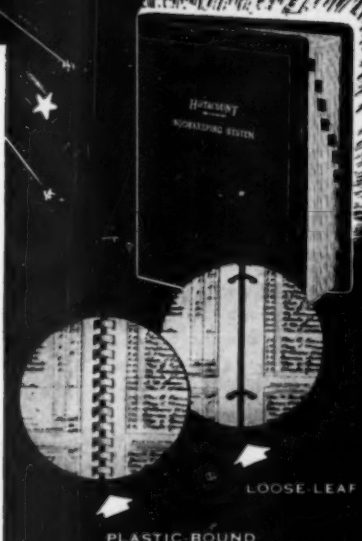
City_____ State_____

K.O.'s

EXPENSES EARNINGS WORRY TAXES

YOUR BOOKKEEPING PROBLEMS WITH HISTACOUNT

More doctors use "Histacount" than any other system. It eliminates all bookkeeping and tax problems; gives your financial status at a glance... what you earn, collect and spend. Enjoy simple, accurate, complete bookkeeping with "Histacount".



REGULAR EDITION

More than 400 pages for daily, monthly and yearly entries... special forms for taxes. Cloth cover, monthly indexes for easy reference. Loose-leaf or plastic-bound. (Refills for Loose-leaf - $3.75) **$7.25**

LIMITED PRACTICE SYSTEM

Same as the regular system but designed to care for practices limited to 90 patients per week. The finest little system of them all. Complete instructions included. Plastic-bound only. **$4.50**

PROFESSIONAL PRINTING COMPANY, INC.
202 TILLARY ST., BROOKLYN 1, N. Y.

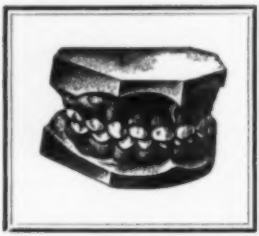
D-12-0

Gentlemen: Send me at once:
☐ Regular Bookkeeping System @ $7.25
☐ Loose-leaf ☐ Plastic-bound
☐ Refill for the Loose-leaf @ $3.75
☐ Limited Practice System @ $4.50
Send ☐ Prepaid ☐ C. O. D.
☐ FREE descriptive booklet

Dr. _____

Address _____

2 Outstanding Contributions to Dental Education and Practice



COLUMBIA DENTOFORMS

FROM a humble start 30 years ago Columbia Dentoforms have played an increasingly important role in dental education. Today every dental student in the United States and Canada "cuts" his first teeth on Dentoforms, for we supply Dentoforms to every dental college in the U.S. and Canada and to many in other lands.

In these 30 years there have been many improvements and additions to Dentoforms to meet the ever more exacting demands of teachers. Today Dentoforms number more than a thousand and present conditions the student will encounter in practice. And in graduate years, Dentoforms continue to help clinicians in postgraduate education and to help the busy practitioner in his endless task of patient-education by showing the better dentistry he seeks to give.

A New Illustrated Price List of Columbia Dentoforms, now on the press, will be available very shortly. Write for your copy.

BROWN ATTACHMENTS

BROWN Precision Attachments have been used successfully since 1920, when patents were granted to their inventor, Dr. I. Brown. This event followed by only a few years the impetus that Dr. Herman Chayes gave to the advance in removable restorations by the introduction of the precision type of attachment.

So simple, yet so effective and practical are the design and mechanical principles employed in Brown Attachments, that they have defied every effort to improve upon them for 30 years. Except for the addition, about 15 years ago, of the proximal contact type, to give the convenience of a built-in proximal contact, no change in design has been made. The sizes of the Brown Attachment made today are identical with those made 30 years ago — a comforting thought if replacement parts are required.

Also available on request are 12 Design Charts of Precision Attachment Cases with Descriptive and Technical Literature.

COLUMBIA DENTOFORM CORPORATION

SERVING DENTISTRY FOR OVER 30 YEARS

131 East 23rd Street — New York 10, N. Y.

A NEW SERVICE

• • • • •

A Quarterly Cumulative
INDEX TO DENTAL LITERATURE
in the English Language

Each issue after the first contains all the material of the preceding issues. A handy reference for everyone who has occasion to refer to dental literature.

Sold on a subscription basis for $30 a year. Additional subscriptions to the same subscriber, $15.

Send in your order today to

AMERICAN DENTAL ASSOCIATION
222 EAST SUPERIOR STREET, CHICAGO 11, ILLINOIS

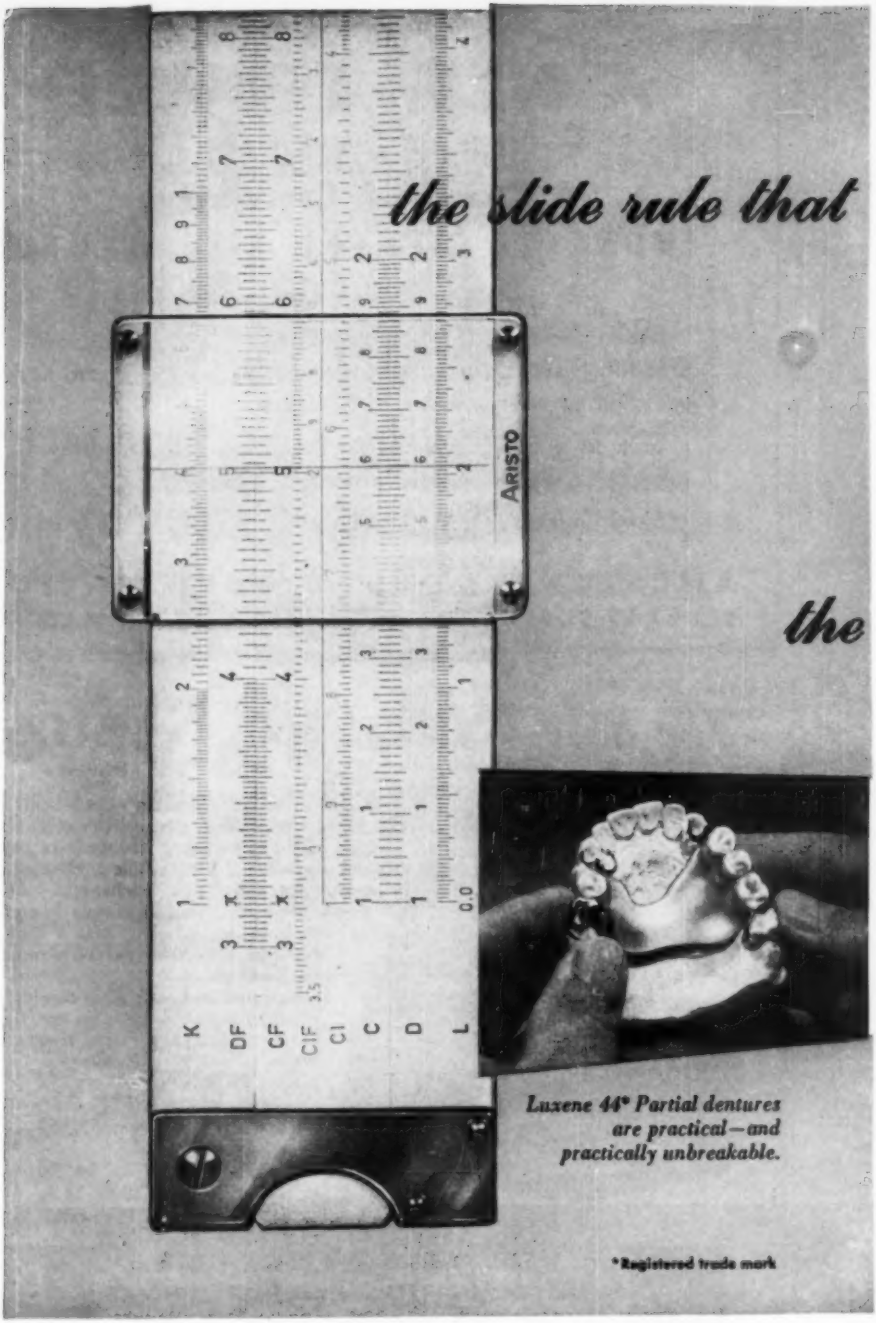
The NEW Crescent WIG-L-BUG (Patented)

Here is the NEW, streamlined Model of the famous Wig-l-bug, the wonder electric-mortar-and-pestle that is placing amalgam work on a scientific basis. The dependable, trouble-free Wig-l-bug mechanism—that has proved so successful—is now housed in beautiful bakelite. And a New, accurate, easy-to-read electric timer has been added.

Requires only 7 to 10 seconds to triturate enough amalgam for the average filling. Saves time, prevents waste, produces uniformly perfect mixes with a smooth, fine texture. Use the Wig-l-bug with your preferred alloy.

Thru Your Dealer or Direct

50th ANNIVERSARY YEAR
Crescent DENTAL MANUFACTURING CO.
1839 South Pulaski Road, Chicago 23, Illinois


the slide rule that
the
ARISTO
K
DF
CF
CIF
CI
C
D
L
Luxene 44* Partial dentures
are practical—and
practically unbreakable.
*Registered trade mark

American Dental Association
RELIEF FUND

never *"slips up"*

There's a good tip for dentists in the reasons for the use of VINYLITE Plastic in this intricate mathematical tool. Selected first for the dimensional stability that assures accurate answers to complex problems in algebra, trigonometry and calculus, VINYLITE Plastic also gives molding accuracy, toughness and resistance to chemicals and water. VINYLITE Plastic gives engineers a slide rule that moves easily and never "slips up" throughout the whole of its long, long life.

denture that never *warps*

For those same reasons – dimensional stability, molding accuracy, toughness and resistance to chemicals and water, many dentists specify VINYLITE Plastic for dentures. "LUXENE 44," for example, has the dimensional stability in wet or dry conditions that assures lasting mouth comfort. "LUXENE 44" and the Pressure Cast Process gives patients a non-warping, practically unbreakable denture that retains its original fit and life-like appearance for the whole of its long, long life!

LUXENE 44* *–of VINYLITE Plastic*
–is the most practical plastic available for dentures to date.

BAKELITE CORPORATION
Unit of Union Carbide and Carbon Corporation
UCC
30 East 42nd Street, New York 17, N. Y.

COLD disinfection of instruments is *rapid*, *convenient* and *effective* with METAPHEN Disinfecting Solution. In the absence of blood or exudate, common nonsporulating pathogenic bacteria (except tubercle bacilli) are killed in ten minutes.

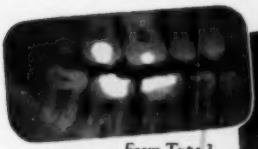
METAPHEN Disinfecting Solution does not produce heat, fumes or offensive odors, does not injure temper, finish or cutting edges of instruments, and does not irritate skin or tissue. It is stable and nonvolatile and leaves instruments ready for instant use. Tests made under office conditions showed that its potency was not diminished even after one month of continuous use.

Try *cold* disinfection now with time-saving METAPHEN Disinfecting Solution. It's available through your usual source of supply in 1-quart and 1-gallon bottles. Abbott

NOTE THE NAME

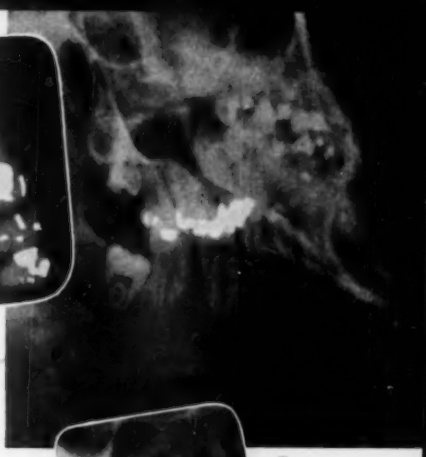
METAPHEN® Disinfecting Solution

Contains METAPHEN (Nitromersol, Abbott) 1:2500



From Type 3 Bite-Wing radiograph

From 3x2¼-inch occlusal radiograph



From 8x10-inch extraoral radiograph

From standard-size periapical radiograph

To make it possible to record the most effective image of a particular structure . . . to provide maximum information in every situation, dental radiography includes . . .

a specific examination for every region

Periapical radiography . . . to visualize the apices of the teeth and contiguous structures.

Interproximal (Bite-Wing) radiography . . . to provide an undistorted image of crowns, pulp chambers, and cervical and gingival areas of the teeth.

Occlusal radiography . . . to provide views of the teeth, maxillae, and mandible from the occlusal aspect, when such supplementary information is indicated or conditions prevent making intraoral studies.

Extraoral and profile radiography . . . to record the teeth, maxillae, mandible, and associated facial structures on a large film, in order to provide additional or special information.

For sharp, bright radiographs ...the Kodak Film-Chemical Combination

1. Use Kodak X-ray Films—Kodak Bite-Wing . . . Kodak Periapical . . . Kodak Occlusal . . . Kodak Blue Brand. Made to help the dentist know *more*, do *more*. Kept fresh in hermetically sealed foil packages.

2. Use Kodak Concentrated Processing Chemicals—Kodak Concentrated Dental X-ray Developer . . . Kodak Concentrated Dental X-ray Fixer. Tested ingredients, compounded with laboratory care.

So, for best results, always use Kodak Film and process it in Kodak Chemicals. Remember—order *together* (through your regular dental dealer) . . . use *together* . . . because they are made to work *together*.

Other Kodak X-ray Products for Dentists: Film Chest, Dispenser, Receptacle . . . Exposure Holders . . . Intensifying Screens . . . Safelight Lamps and Filters . . . Processing Tanks . . . Processing Hangers . . . Thermometer . . . Mounts . . . Film Corner Cutter . . . Illuminator.

LOCATE UP TO 40% MORE CAVITIES

Many influences are working today to focus attention on care of the teeth . . . so it is easier to interest more patients in preventive dentistry. Make available to them the Kodak 12-page booklet, "How to Prevent Toothache," by Howard R. Raper, D.D.S. (First 50 copies are free; additional copies, $1 per 100.) Distribution of this booklet should assure more Bite-Wing x-ray examinations that lead to the location of up to 40% more cavities.

Eastman Kodak Company
X-RAY DIVISION
Rochester 4, N. Y.

Kodak
TRADE-MARK

TM ALL-PURPOSE VIBRATOR

. . . for trays, inlays and HEAVIEST FLASKS!

At last . . . a vibrator with three speeds with full power to take care of every vibrator job in the office or the dental lab . . . from trays and inlays to even the HEAVIEST FLASKS.

Scientifically engineered, the TM, though only 4½" square is built for heavy duty laboratory use. Comes in green hammerloid or chrome finish. Foot control switch available at additional cost. Free literature available. Model 6H $17.50

CONTROLLED AMALGAMATION

TM Amalgamator with head, funnel and massager . . . $12.50

Wall Bracket $2.00

Small, medium or large mixes blended to bright, velvety texture in approximately 10 seconds . . . BEFORE YOUR OWN EYES. Clear plastic head tells you exactly when mix is complete. TM amalgamator with massage element is used in the treatment of Pyorrhea.

TM MATRIX RIBBON

(.002 thickness)

- It's Stronger Stainless
- Super-Finished Smoother
- Visible Supply

Available in ⅜", ¼", 5/16", ¼", ⅛" 10 foot roll..$.75

The TOOTHMASTER CO. RACINE, WIS.

CLEAN and POLISH

Teeth - Gold - Porcelain

with

BURLEWS

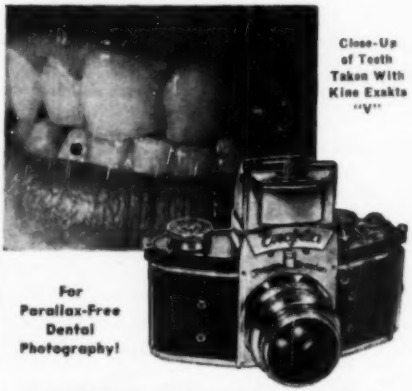
Faster - Safer - Cleaner

Can't scratch or spatter.
The pumice is in the discs.

J. F. JELENKO & CO., Inc.
136 W. 52nd St., New York, U.S.A.

$1.00 a Box
Any style or Assorted.

CUP CONE



Close-Up of Tooth Taken With Kine Exakta "V"

For Parallax-Free Dental Photography!

1950 KINE EXAKTA—MODEL V

35 mm. Single Lens Reflex Camera

For photographing conditions before and after treatment, cavities, inlays and bridgework, and for recording and for demonstrating oral treatment to patients. The indispensable aid of the progressive dentist! With f3.5 Zeiss Tessar "T" Coated Lens..... $180.00*

Penta Prism Eye Level Reflex Viewfinder..... 80.00*

Extension Tube Set..... 24.00

Microscope Adapter..... 29.50

*plus tax

FREE—Write Dept. 312 For Free Descriptive Booklet "V" on Camera & Accessories and Brochure On Close-Up Technique With Kine Exakta.

EXAKTA CAMERA COMPANY
46 W. 29th St., New York 1, N. Y.

Exclusive Sales And Service Organization In U.S.A. For Ihagee Camera Works, Germany.

Copyright 1950, Exakta Camera Company, Inc.

it costs no more to be sure

it will fit . . . just make it

a *Replicast* PRECISION REMOVABLE

Think what it would be worth to your peace of mind to know in advance that your partial cases—no matter how difficult—will fit just as you intended they should.

But whatever that comforting assurance would be worth to you, you don't have to *pay* more for it. It's a part of the bonus you get—in satisfaction and in enhanced prestige—when you order REPLICAST precision removables.

The reason lies in the testing-laboratory precision of the Dresch-developed REPLICAST technic, which eliminates the "variables" of conventional casting methods. Like the precision technics of industry, it lends itself to efficient, step-by-step production, yielding a more accurate result at a cost that is no greater, and in some cases even less.

Discover for yourself why these supremely accurate appliances have won preferment by outstanding dentists from coast to coast. Mail the coupon or write for full particulars now.

REPLICAST ...A METHOD... NOT A MATERIAL

The Dresch Laboratories Company
1009 Jackson Street—Toledo 1, Ohio

Tell me more about 'REPLICAST' precision removables.

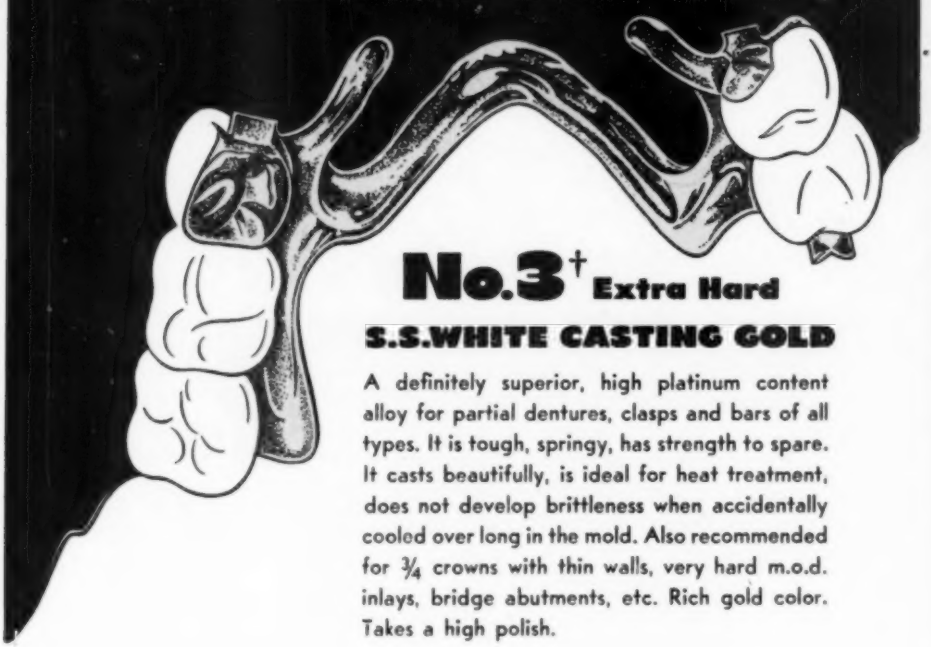
DR._____

*Street Address*_____

*City—Zone—State*_____

JDO

For all casting



No.3† Extra Hard
S.S.WHITE CASTING GOLD

A definitely superior, high platinum content alloy for partial dentures, clasps and bars of all types. It is tough, springy, has strength to spare. It casts beautifully, is ideal for heat treatment, does not develop brittleness when accidentally cooled over long in the mold. Also recommended for ¾ crowns with thin walls, very hard m.o.d. inlays, bridge abutments, etc. Rich gold color. Takes a high polish.

Generous returns for precious metal scrap

We will assay (in lots of 5 ounces or more) or estimate, whichever gives the better return to you. Ask your dealer.

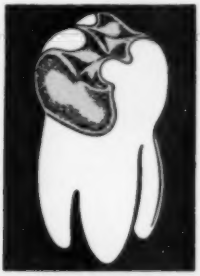
THE S.S.WHITE DENTAL MFG. CO.
Philadelphia 5, Pa.

requirements

Only four alloys, yet they will fulfill all your partial denture and inlay needs, and give complete satisfaction because each is a top-grade gold.

S.S.WHITE CASTING GOLDS FOR INLAYS

No.900*
FOR SOFT, TYPE A, INLAYS



No.820*
FOR MEDIUM HARD, TYPE B, INLAYS

No.13*
FOR HARD, TYPE C, INLAYS

* Comply with A.D.A. Specification No. 5

† No A.D.A. specification has been set for this type of gold.

For Other Than Casting

PLATES
SOLDERS
FILLING GOLDS
CROWNS
SHELLS
DISKS
PALATAL BAR WIRE
LINGUAL BARS
CLASP WIRES
ORTHODONTIC WIRES, ARCHES, BAND MATERIALS
LIGATURE WIRE
FLUXES
BLOWPIPES for orthodontics, soldering, and casting

A LAXATIVE FOR *judicious* THERAPY

because of its

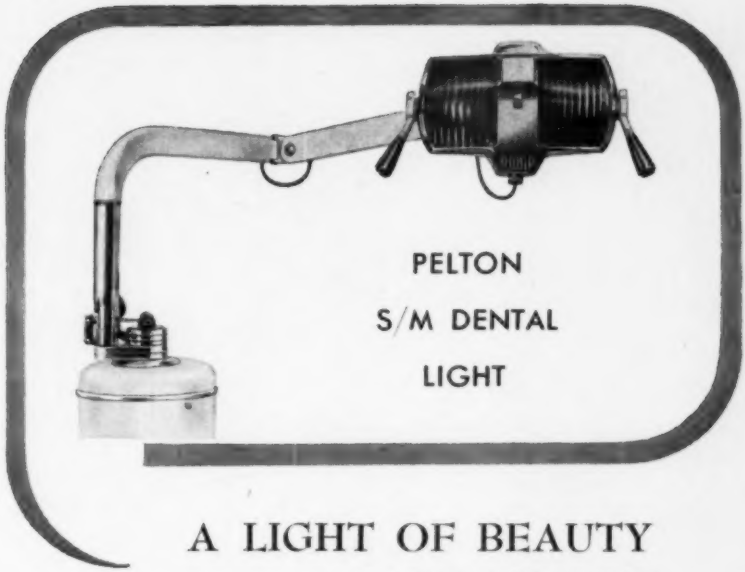
Broad Clinical Acceptance

Phospho-Soda (Fleet)'s* wide acceptance by physicians everywhere is a tribute to its prompt, gentle laxative action—thorough, but free from disturbing side effects. Leading modern clinicians attest its safety and dependability as a pre-eminent saline eliminant for judicious relief of constipation. Liberal office samples on request.

*Phospho-Soda (Fleet) is a solution containing in each 100 cc. sodium biphosphate 48 Gm. and sodium phosphate 18 Gm. Both 'Phospho-Soda' and 'Fleet' are registered trade marks of C. B. Fleet Company, Inc.

C. B. FLEET CO., INC. • LYNCHBURG, VIRGINIA

ACCEPTED FOR ADVERTISING BY THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION



A LIGHT OF BEAUTY . . . A JOY TO USE

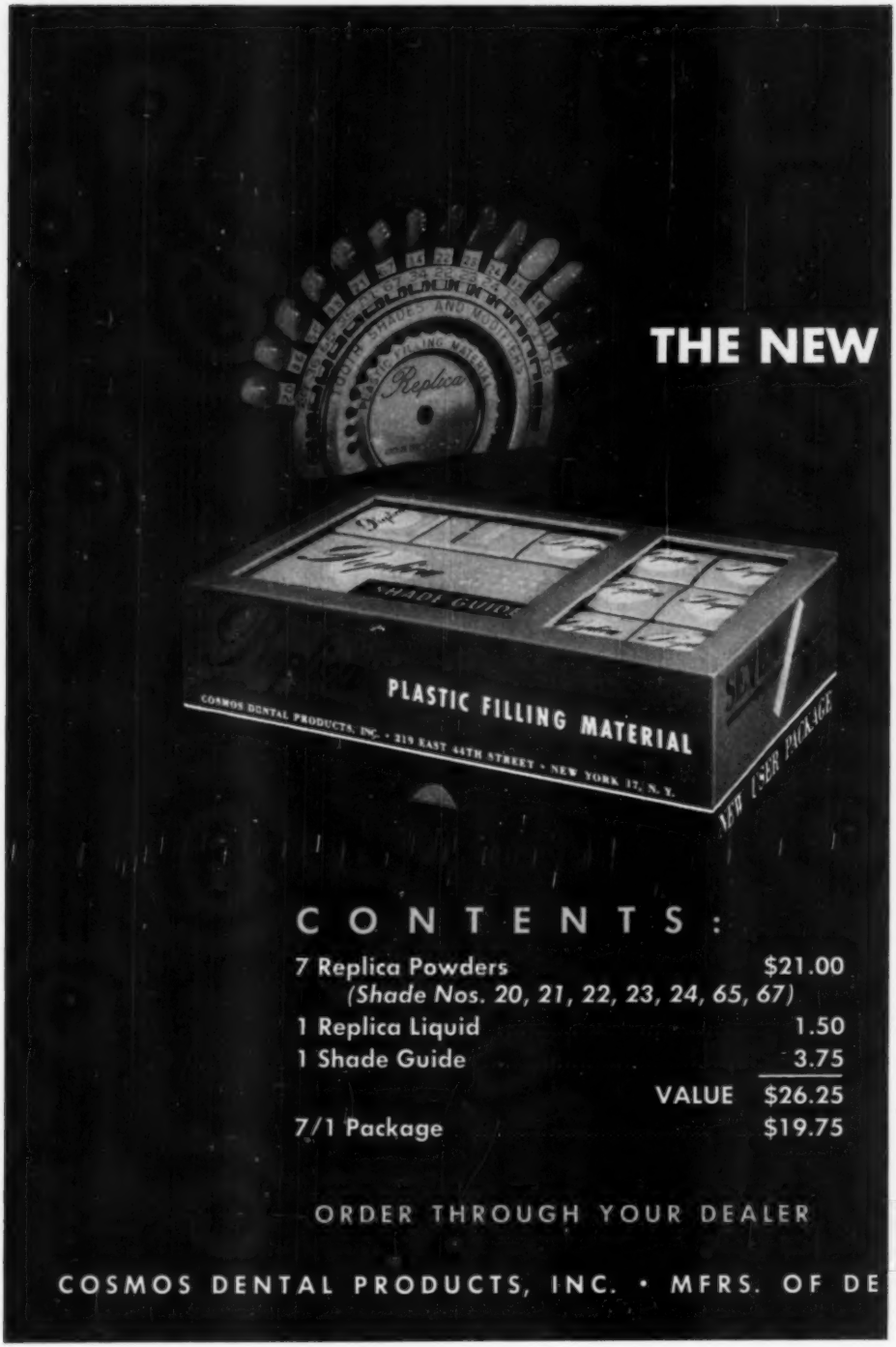
- ☆ Divided light source projects two converging beams that form a shadowless 3" x 8" pattern on operating area without striking the patient's eyes.
- ☆ Completely enclosed, scientifically designed head, reduces heat.
- ☆ Push-button switches in both insulated, plastic handles.
- ☆ X-ray viewer.
- ☆ Flexible arm holds any position steadily.

Try It and SEE

If you agree "A thing of beauty is a joy forever," then look to the Pelton S/M Dental Light. Its beauty will captivate you . . . *and your patients.* What's more, it's as efficient as it is beautiful. It puts cool, color-corrected, shadowless light where you want it, easily and quickly. Both optically and mechanically, the S/M Light is the finest in our long experience in providing better illumination for dentists. Let *your eyes* tell you . . . see it and try it at your dealer's or write for literature.

PELTON

THE PELTON & CRANE CO., DETROIT 2, MICHIGAN


THE NEW
Replica
PLASTIC FILLING MATERIAL
COSMOS DENTAL PRODUCTS, INC. • 219 EAST 44TH STREET • NEW YORK 17, N. Y.
NEW USER PACKAGE
CONTENTS:
7 Replica Powders $21.00
(Shade Nos. 20, 21, 22, 23, 24, 65, 67)
1 Replica Liquid 1.50
1 Shade Guide 3.75
VALUE $26.25
7/1 Package $19.75
ORDER THROUGH YOUR DEALER
COSMOS DENTAL PRODUCTS, INC. • MFRS. OF DE

SEVEN ONE PACKAGE OF

Replica is the proven, easiest-to-use plastic filling material! Ideally suited for mixing in a dappen dish, since it does not require spatulation! At the proper consistency, Replica clings tenaciously to cavity walls—*it stays in place!*

Clinicians have also found the properties of Replica to be of decided advantage in the cementation of inlays, crowns and bridges.

AS A FILLING MATERIAL: In clinics and in private practice during the past two years, thousands upon thousands of Replica fillings were made without a single report of a filling "washing out" falling out, leaking or causing pulp injury! Doctors also agree it is by far the easiest to mix and use.

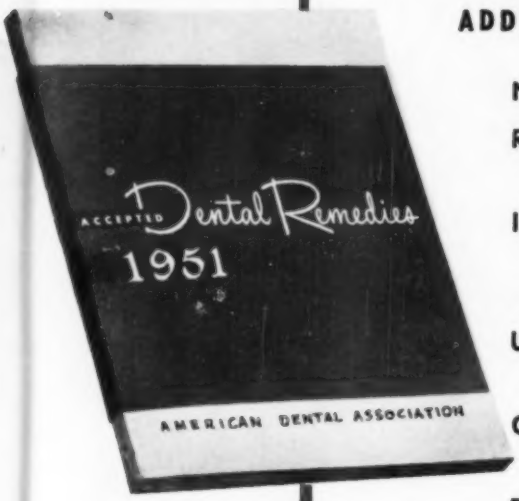
AS A CEMENT: The unique plasticity of Replica coupled with its stability in oral fluids and its extremely fine film-thickness, present many advantages in the cementation of crowns, inlays and bridges. No galvanic action.

REPLICA IS ANOTHER COSMOS PRODUCT

NSENE "33" • 219 E. 44TH ST., NEW YORK CITY

THE 16TH EDITION . . .

ACCEPTED Dental Remedies



IMPORTANT ADDITIONS AND REVISIONS

- New classification of products
- Revised provisions for acceptance of products
- Information on agencies responsible for drug standards
- Up-to-date listing of commercial products
- Current information on therapeutic agents
- Prescription writing

Available January 1st, 1951 at only **$1.50**

GET THE FULLEST USE OF YOUR ADR . . . SEND YOUR ORDER *TODAY* TO:

AMERICAN DENTAL ASSOCIATION
222 E. SUPERIOR ST. • CHICAGO 11, ILLINOIS
ada

DECEMBER 1950

THE Journal OF THE AMERICAN DENTAL ASSOCIATION

VOLUME 41 • NUMBER 6

The use of wire and silk ligatures

Leonard Hirschfeld, D.D.S., New York

Ligation is a procedure which may be of great value in stabilizing teeth and in performing limited tooth movements. It is most frequently required in treating periodontal disease, and since an increasing number of general practitioners are becoming actively interested in periodontia a detailed description of certain methods of using steel wire and silk ligatures may be of value.

Teeth that have become markedly loose as a result of alveolar destruction or pericementitis frequently must be stabilized temporarily or permanently. The dentist may accomplish stabilization by several methods. He may construct inlays, crowns or pinledge attachments for two or more teeth and solder them together to form a permanent fixed splint; he may make a removable metal or acrylic splint, which may or may not be incorporated into a partial denture, or he may ligate the teeth with stainless steel wire. When stabilization is required for only a few days he may ligate the teeth with waxed dental floss.

This paper proposes to discuss in detail different methods of ligation, and to present briefly the indications and contraindications for each method of stabilization.

Permanent fixed splints are indicated when teeth have lost so much alveolar support that the ordinary forces of mastication exert excessive leverage on the root, and when splinting might prevent damage to the remaining periodontal membrane and alveolar bone. In such cases the fixed splint permits normal function of loosened teeth with consequent improved local functional hygiene and stimulation. Fixed splints also are valuable when a tooth with diminished alveolar bone continues to extrude, in spite of apparently successful periodontal treatment, because of constant excessive back-and-forth movement in function. When teeth with reduced alveolar sup-

From the Section of Periodontology, School of Dental and Oral Surgery, Faculty of Medicine, Columbia University.

port are to be used as abutments for restorations, they often should be splinted to firmer adjacent teeth.

There are several disadvantages to fixed splinting. Teeth must be prepared for the inlays, crowns or pinledges. A tooth with a questionable prognosis may be included in the splint only at considerable risk, since the whole splint may have to be destroyed if that one tooth requires extraction, causing the patient considerable additional expense. In addition, in certain mouths with a high caries susceptibility, leaks and decay may develop along the margins of the inlays or crowns.

Removable splints, or partial dentures with splinting arms or clasps, do not have the above disadvantages. However, they cannot always insure as complete stabilization as soldered attachments, especially when multiple tooth abutments are required. They also may be unesthetic and may feel bulky or heavy. In addition, the forgetful or negligent patient may not use them all the time. Obviously, therefore, the advantages and disadvantages of the two types of splints must be evaluated for each individual case.

Dental floss or stainless steel wire ligatures are indicated when the need for stabilization is temporary. The dental floss can remain in place only a few days before becoming loose and foul-smelling but it may be applied quickly and may be used to stabilize a tooth with acute pericementitis, in order to reduce the pain caused by movement. Wire ligatures are frequently useful on anterior teeth during periodontal treatment and for a year or two afterwards in order to encourage consolidation of the supporting structures. After this period of ligation, the teeth may have become firm enough to eliminate the necessity of splinting. There also are times when a tooth with a questionable or poor prognosis may be retained with the aid of a wire ligature until the ultimate result of treatment can be ascertained. A ligature also may be used to stabilize a tooth that has been loosened by a blow or other trauma. Wire ligatures often may be used to produce the firm multiple-tooth anchorages which are necessary prerequisites in the movement of teeth by means of contracting silk ligatures.

A well-made wire ligature can remain in place for several years although it may be necessary in some cases to tighten it at intervals. If the ligature is placed correctly, it does not injure the gingivae as it remains a considerable distance from the margin, but meticulous home care is required to keep the area free of food and debris. The wire ligature is not entirely esthetic, but most patients do not object to it as it is made of fine wire and usually is covered by the lips.

BASIC METHOD OF LIGATING

Ligation of the lower six anterior teeth is discussed in this paper, but the method may be adapted to any other number or group of anterior teeth. It is desirable to have a firm tooth at each end of the ligated group, but this is not always possible.

The ligature consists of a continuous labial and lingual arch wire and short individual interproximal loops. The arch wire is formed by doubling an .008 inch stainless steel wire on itself and passing the closed end through the interproximal space distal to the lower right cuspid (Fig. 1A). The doubled wire is placed loosely against the lingual surfaces of the six teeth and the closed end is passed back to the labial side through the space distal to the lower left cuspid. The open-ended half of the doubled wire is then placed along the labial surfaces of the teeth. The labial and lingual wires are adapted to the right cuspid by means of cotton pliers or a thin flat-bladed contra-angle instrument, and sharp indentations are made between the cuspid and the lateral incisors at the point where the interproximal wire is to be placed. This

step produces tight adaptation of the arch wires to the teeth when the interproximal wires are tightened later. A single short strand of the same .008 inch wire is inserted from the labial side, underneath the labial and lingual arch wires and returned from the lingual side over the arch wires but still under the contact points of the teeth (Fig. 1B). The two ends of this interproximal wire are loosely twisted to the right with the fingers or cotton pliers and then grasped with a small hemostat and twisted fairly tight. While the hemostat is being turned, it should be pulled in a labial direction in order to draw the lingual arch wire a short distance into the interdental space causing it to fit the lingual surfaces closely. The arch wires then are adapted to the labial and lingual surfaces of the lateral incisor and indented, and the next interproximal loop is placed (Fig. 1C).

Because of their anatomy, the anterior teeth are the most eligible candidates for ligation. It is essential that the arch wires be placed correctly; that is, incisally to the cingulum, which is at the greatest labiolingual diameter of an anterior tooth and gingivally to the contact point which is at the widest mesiodistal diameter of the tooth (Fig. 2). If placed in this manner, the ligature is prevented from slipping off, or from sinking below the cervix where it would become ineffective, or damaging to the gingival tissues, and where it might even cause rapid extrusion of the tooth.

The interproximal wires are applied one after another until the distal of the left cuspid is reached, at which point the labial and lingual double arch wires are twisted together and tightened, then cut fairly short (3mm.) and tucked interproximally, distal to the cuspid. Indenting the labial arch wire between the cuspid and first bicuspid is an aid in locating the final knot in the interproximal space rather than on the labial surface of the cuspid where it can irritate the lip. It is important for all interproximal wires to be twisted in the same direction, usually clockwise, so that they may be tightened or loosened at any future time without doubt or confusion.

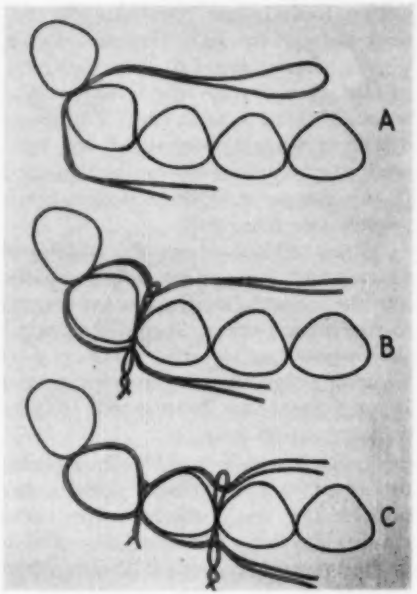


Fig. 1 • Forming the arch wire. A: Closed end of a double strand of .008 stainless steel wire is passed through the interproximal space distal to the cuspid. B: Placement of the first interproximal wire. C: Placement of additional interproximal wires

After the arch wires have been twisted tight, the interproximal wires are tightened additionally, in succession, but one must be careful not to twist them to the breaking point. If they should break, however, they can be replaced easily. The twisted ends of the proximal loops are cut, leaving 2 or 3 millimeters length of wire which is tucked gingivally by means of cotton pliers into the interproximal spaces (Fig. 3). The twisted end must be long enough to be grasped by the hemostat, should the ligature require tightening at a later date. It is advisable to test the firmness of the ligature and the

ligated teeth before dismissing the patient. Because the arch wires may stretch slightly during the first few days, the patient should have the interproximal wires tightened a week later. The figure 8 type of wire ligature which has been used for generations can not be tightened in this manner and when it stretches it loses its effectiveness.

In the original wiring the labial and lingual arch wires must not be drawn into the interproximal spaces far enough to touch each other. Should that occur they cannot later be made more taut by tightening the interproximal loops, and in such event the ligature will require replacement.

The arch wire is used double in order to provide added strength without the bulk that a single thicker wire would entail. The finer .008 inch wire also is easier to manipulate and is more easily adapted in the interproximal spaces. However, after experimenting with this method, the practitioner may decide to use a single .010 inch wire and may judge between the two. If the arch wire ever breaks as a result of excessive stresses, it may be replaced with a doubled .010 inch wire. When upper anterior teeth are ligated, the incisal edges of the lower teeth must clear the ligature to prevent its dislodgment. Clearance sometimes may require grinding of the lower teeth.

VARIATIONS AND ADDITIONS

Unfortunately, all teeth are not ideally shaped or aligned for ligation, and ingenuity frequently is required to invent variations in design to make certain that the ligature remains in place. Several variations will be described which will care for the great majority of difficult cases but each practitioner will be compelled to devise additional ones to meet specific needs.

Arch wires may slip off cuspids or other teeth with conical crowns, especially in the absence of a tight contact with adjacent teeth. A cervical loop is required in such cases. A single strand of .008 inch wire is placed around the neck of the tooth and twisted until the loop is firmly retained below the cervical line and cannot be drawn incisally (Fig. 4). In twisting, the tips of the hemostat should be placed as near the tooth as possible in

Fig. 2 • Arch wires are placed incisally to the cingulum

Fig. 3 • Twisted ends of interproximal wires are tucked into the interproximal spaces

Fig. 4 • A cervical loop used to retain arch wire in position

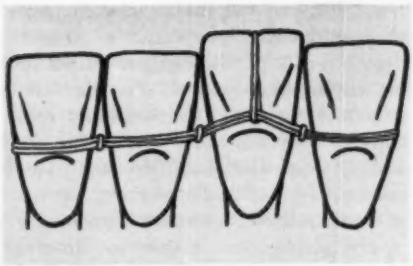


Fig. 5 • Incisal wire used to retain arch wire in position

order to limit to three or four the number of twists required to make the loop tight. If more than that number have been made, the ends should be carefully unwound until only three or four twists remain. One strand is passed between the tooth and the arch wire, before the latter is made tight, and the other strand is permitted to remain outside. The two strands are then twisted together once more until the wire is tight, cut short and tucked interproximally. The twisted section reaching from the cervix toward the arch wire can be pushed interproximally after it is tight. If there is an open contact point distal to the cuspid, or if the cuspid tilts mesially, it is helpful to apply a cervical anchor wire in the first stages of ligating in order to hold the arch wire in place during the whole procedure.

Some cuspids are so conical that a cervical wire will not remain below the cervix; in such cases, it is placed about the neck of the adjacent bicuspid and then attached to the arch wire on the cuspid just as described above. Many cuspids do not at first glance appear to require cervical anchorage, but arch wires may stretch slightly and it is worthwhile, therefore, to use cervical wires routinely because they take only a few seconds to apply and may prevent dislodgment of the ligature. When only two teeth are being ligated, it may be necessary to use cervical wires on both teeth. The cervical wire may be placed under the gingival margin, but the wire, closely adapted to the tooth, is compatible with the tissue and usually causes no irritation of the gingivae.

If the cingulum of a tooth is not well developed or if the tooth is extruded to such an extent that the lingual arch wire must be curved incisally in order for it to remain over the cingulum, it may be necessary to pass a separate wire over the incisal edge between the labial and lingual arch wires (Fig. 5) in order to prevent the arch wires from slipping cervically over the cingulum. This incisal wire may be fixed in place mesiodistally by cutting a small notch in the incisal edge of the tooth. This also prevents the wire from being bitten through.

When teeth are separated more than 1 or 2 millimeters, or when one tooth is missing, the labial and lingual arch wires are joined and twisted just sufficiently to bridge the space, and are then returned to their positions for the next tooth (Fig. 6).

Wire ligation of posterior teeth is comparatively unsatisfactory, as the arch wires tend to slide below the necks of the teeth unless there is marked constriction of the cervices or the roots are exceedingly heavy. As the ligature slides cervically it becomes loose because of the decreased circumference of the tooth. It sometimes is possible, however, to hold up the arch wire with separate wires passing over the occlusal surfaces or around cusps in the

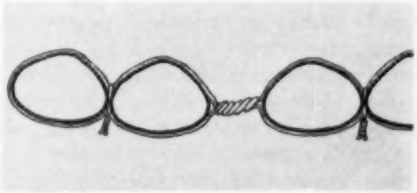


Fig. 6 • Arch wires are joined and twisted to maintain space

manner of suspenders, and similar to the method demonstrated in Figure 5.

INDICATIONS FOR VARIOUS METHODS OF MOVING TEETH

It frequently is desirable to move one or more teeth short distances. The dentist may wish to return to its original place a tooth which has migrated or extruded as a result of periodontal disease. He may desire to move a tooth back which has drifted into an adjacent edentulous area, in order to allow the insertion of an artificial tooth of proper width, or he may want to correct an unsightly minor defect in the alignment or spacing of one or more incisors. The spacing may have been caused by periodontal disease, hereditary or developmental factors, or by drifting following nonreplacement of missing teeth. In certain cases, excessive traumatization by occlusal forces may be corrected more permanently by moving the tooth than by grinding it.

It is essential for the dentist to know all methods by which teeth may be moved in order to select that method or combination of methods which will be most effective and practical for each case. The most complex but most easily controlled procedure involves the use of orthodontic bands, arch wires and springs in fixed appliances. Removable appliances based on the Hawley retainer, with the possible addition of springs embedded in the acrylic palate or soldered to the labial arch wire, are more simple and more hygienic than orthodontic appliances but they cannot supply all the movements made possible by the latter type of appliance. In certain cases, teeth may be moved by exercise or frequent manipulations by the patient with tongue depressors or similar objects. A fourth method, which occasionally can be employed in cases where other procedures are inapplicable, is the use of a silk ligature which contracts when it becomes wet.

The silk ligature is indicated when too few teeth are left in the jaw to permit the use of a Hawley retainer or when the presence of a partial denture makes such an appliance awkward. The ligature is practical when the contemplated movement is very minor or when time or financial considerations do not permit construction of an appliance, or when it is unavailable for other reasons.

The silk ligature has certain disadvantages, and therefore its use is not indicated generally when another method may be applied. It may, after several days, absorb food or become loose and it does not allow as good hygiene as does the removable appliance. It does not provide as accurate control of the amount of tooth movement at each stage, although experience teaches one the approximate amount of movement to be expected from any specific arrangement of the silk ligature. If the ligature is not placed properly, it may be bitten through or displaced cervically or incisally, but these mishaps generally can be prevented. On the other hand, the silk ligature, used alone or in conjunction with wire, is a useful material at certain times and its advantages then may outweigh its disadvantages. Movement of teeth at too rapid a pace can be dangerous and it must be emphasized that careless use of the ligature can severely damage the pulp and periodontal structures.

Teeth may be moved mesiodistally or labiolingually, or they may be extruded or depressed or, at times, even rotated with silk ligatures. In planning the ligature, it is helpful to think of it as having two components—an anchoring section, which is tied around one or more teeth, and a contracting section, which is usually a straight line or an arc between anchor sections. The amount of movement will depend mainly on the length of the contracting sections. Contraction of the silk anchoring section merely tightens the loops on the teeth but causes no movement. For most effective movement, the contracting part should be a single or

double string rather than a series of knots. A double string will exert more force in moving a tooth but it will not contract any further than a single one.

The contracting force of even a single string often is sufficient to cause movement of teeth, especially if the amount of alveolar support is below normal. If both anchor teeth have equal support, they will be moved toward each other as in Figure 7. If one end of the contracting section is securely anchored to a firm tooth or to a group of teeth, its contraction will move a less firmly based tooth towards the anchor group (Fig. 8). If both ends of the contracting section are attached to firm groups of teeth and the

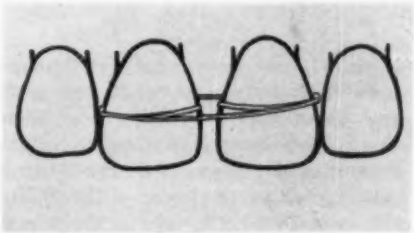


Fig. 7 • Anchor teeth having equal alveolar support may be moved toward each other

ligature is in an arc, the arc will flatten out and move a less firm tooth into the newly-shortened arc as in Figure 9.

After the ligature cord is removed from the spool it should be stretched thoroughly. This stretching will prevent the cord from curling and twisting which makes manipulation difficult. It also insures tighter adaptation to the teeth and straighter contracting sections. The field must be kept dry until the ligature is completed and the knots must always be tied triple. The final knot should be tied in the opposite direction to prevent slipping.

The simplest type of ligature arrangement moves two teeth together as in

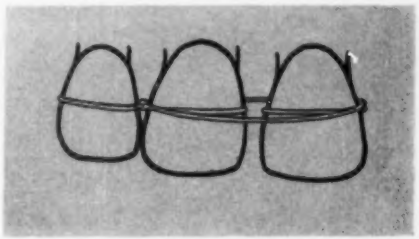


Fig. 8 • An insecurely supported tooth may be moved toward securely supported anchor teeth

Figure 7. If a diastema between two upper central incisors is small, it may be desirable to move them together so that a space only one half as great is left distal to each one. If there should happen to be distal fillings in the central incisors or mesial fillings in the lateral incisors they may be over contoured in order to provide proximal contact and thereby prevent return of the diastema. A loop is tied around one central incisor (incisally to the cingulum and gingivally to the greatest mesiodistal width at the contact point) and knotted on the distal side of the tooth. The strands then are brought labially and lingually respectively to the distal side of the other central incisor and knotted once more. They are then tied around that tooth in order to prevent the ligature from coming off. If the tooth is shaped in such a manner that the ligature cannot be

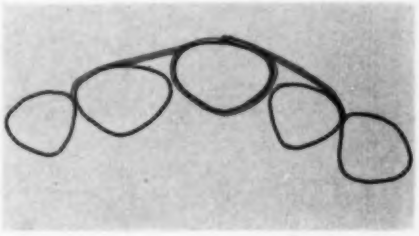


Fig. 9 • A labially inclined tooth may be moved lingually

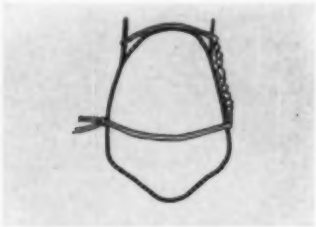


Fig. 10 • Ligature held in position by cervical loop and knotted cord

retained, it may be anchored below the cervical line as in Figure 10, where the first loop is made apically to the cervical line and enough knots are made to bring the knotted cord past the cingulum. At this point, the loop is made around the crown and the procedure continues as previously described. In tying a triple knot, there is sometimes a tendency for the first knot to slip. A small drop of water, applied to it with the tips of a college pliers will cause localized swelling and binding, without wetting the rest of the ligature, until the second and third knots can be tied.

When one tooth is to be moved toward another (Fig. 8), the latter must be supported by one or two neighbors unless it happens to be much more firmly embedded in alveolar bone than the tooth to be moved. One quick way of tying together the two anchor teeth is seen in

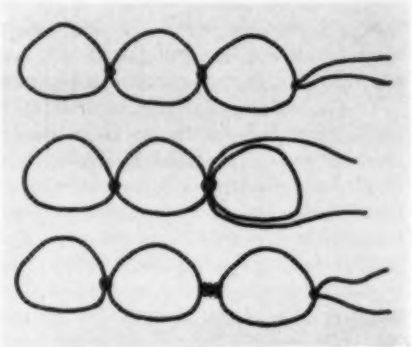


Fig. 12 • Three tooth anchor. Above: Loops are knotted in interproximal spaces. Center: Location of knot used for long contracting section. Below: A series of knots maintains small separation between teeth

Figure 11, left. A section of cord is placed across the labial surfaces of the two teeth, one above and one below the labial string. They are knotted tightly in the interproximal space and the strands passed to either the labial or the lingual side as in Figure 11, right. If three teeth are to be used as an anchorage, the loops may be made as in Figure 12, above. If a longer contracting section is required, the final knot may be made as in Figure 12, center.

If one of the anchor teeth is a short distance from the other and it is not desired to move them together, a series

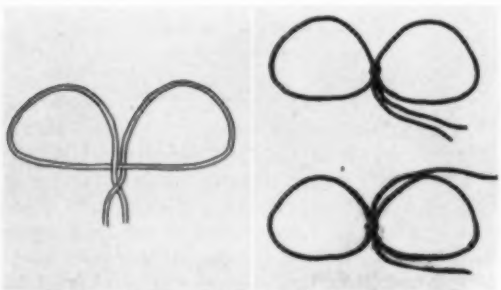


Fig. 11 • Quick method of tying together two anchor teeth. Left: Cord is placed across labial surfaces of two teeth, one above and one below the labial string. Right: The cords are knotted tightly in the interproximal space

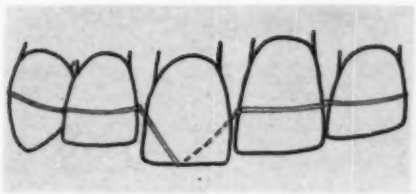


Fig. 13 • An incisal ligature forces an extruded tooth to normal position

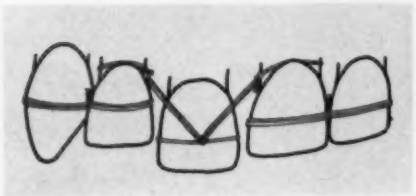


Fig. 14 • Position of ligatures used to depress and move teeth lingually

of knots between the separated teeth and the others will prevent movement and yet support the teeth (Fig. 12, below).

When a more complicated arrangement is required, it generally is advisable to stabilize the anchor teeth with steel wire ligatures, which will give firmer fixation. Once the wire anchor ligature is applied, it remains in place and only the silk contracting sections must be changed at each visit, reducing the chair time considerably. When a steel wire anchor is in position it is necessary only to tie the silk ligature to the wire at the interproximal space or to attach it to one of the anchor teeth and proceed from there just as though the silk were anchored as in Figures 11 or 12.

In periodontia, the contracting ligature is used commonly to depress and move back into line a tooth which has extruded and migrated labially. There are several ways of doing this. In one relatively simple method,[1] a small notch is made in the incisal edge of the tooth to be moved and a ligature passed from an anchor group obliquely across the labial surface to the notch and then up the lingual surface to the other anchor group (Fig. 13). The contraction of the cord will depress the tooth rather than pull down the firmly fixed anchor teeth.

Another method which may be found to be more useful when the tooth is to be moved palatally or lingually as well as depressed, is illustrated in Figures 14, 15 and 16. Two 6 inch lengths of ligature are tied as in Figure 15. A loop is then made about the tooth to be moved, with the second knot either immediately adjoining the first one, or at opposite sides of the loop. This loop is placed on the tooth incisally to the cingulum and the

1. Miller, Samuel Charles, Textbook of Periodontia. Philadelphia: Blakiston, 1948, p. 342.

Fig. 15 • Showing method of making loop for tooth to be depressed

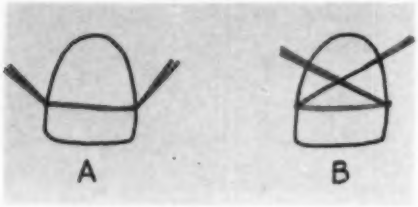


Fig. 16 • Loop is placed incisally to cingulum and various lengths of contracting action arranged

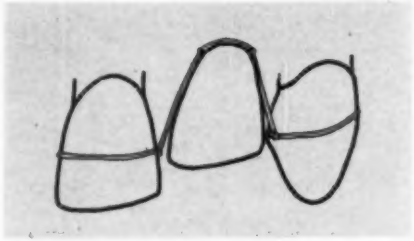


Fig. 17 • Placement of ligature for extruding tooth

strands are fastened to previously prepared anchors in one of three ways, according to the amount of contracting length desired. It is obvious that if the lines are arranged as in Figure 16B, their length will be greater than as in Figures 16A and 14, with consequent greater movement of the tooth. An occlusal view of the arrangement in Figure 14 is seen in Figure 9.

Most of the movement occurs during the first day after ligation, and a week or ten days should be allowed for repair before any further movement is attempted.

When a tooth is moved, of course, there must always be a space for it to enter. When a labially malposed tooth is to be moved lingually into alignment, it may be necessary to strip its proximal surfaces and those of the adjacent teeth in order to create sufficient room for it. Any occlusal or habit factors which may cause it to be forced back to its original position must be removed.

A tooth which has been driven into its socket by trauma (Fig. 17) may be pulled down by means of silk ligatures. The technic is the same as that for depressing teeth except that the loop is placed below the cervix of the tooth to be pulled down.

SUMMARY

1. The indications and contraindications for various procedures for stabilizing teeth have been discussed.

2. A basic method of steel wire ligation has been described, as well as variations to overcome difficulties of unfavorable alignment or anatomic forms of the teeth to be ligated.

3. The main methods of moving teeth have been briefly discussed.

4. The application of contracting silk ligatures to depress or extrude teeth or to move them mesiodistally or labiolingually, has been described in detail.

730 Fifth Avenue

Fractures of the jaw.
A survey of 2,124 cases

Stephen P. Mallett, D.M.D., Boston

This report, based on a series of 2,124 cases of fracture of the jaw seen at the Boston City Hospital, presents the important points in the management of these cases. The period covered extends from 1919, when dental hospital records were first kept, through March 12, 1948. One thousand, one hundred and twenty-four cases were seen from 1919 to 1933, and 1,000 from 1934 through March 12, 1948.

Before 1916, fractures of the jaw were treated by the surgical staff, with unsatisfactory results. Since that year, the dental staff has been responsible for these cases, and the results have constantly improved. Prior to 1934 fractures were recorded as mandibular or maxillary but the exact location was not mentioned. In the last period covered by this report (1934 to March 12, 1948) the exact site of the fracture was mentioned in 1,000 cases, and it is with these that this report is primarily concerned. It is logical to assume that more exact records in the first 1,124 cases would have indicated essentially the same location of fractures as in the later period, since the site in as many as 1,000 cases may safely be regarded as typical.

The increase in the number of fractures each year has emphasized the need for a well organized and trained autonomous dental staff. It is apparent that nearly all the visiting members of the staff never witnessed the actual treatment of a fracture of the jaw in their dental school education, and in this respect the training of dentists has been faulty. Because Basil G. Bibby, former dean of Tufts College Dental School, realized the need for undergraduate training in the treatment of fractures, since 1934 the senior class has received lectures on the subject, and the students have visited the hospital to observe the treatment.

When the patient's physical condition is satisfactory, reduction of fractures is performed by an oral surgery house staff of one resident, two assistant residents and three interns soon after the patient's arrival on the accident floor even if between midnight and morning. The results have been better than many years ago, when a visit in the hospital was made only every other day. Most fractures today are reduced within a few hours after they have been sustained and the incidence of complications such as abscesses and nonunion has consequently been greatly lowered.

With penicillin therapy and early reduction, fractures are seldom complicated by infection. The expense to the hospital is consequently less because a few days of treatment with penicillin after reduction adds up to less than the cost of extraoral incision and drainage,

Oral Surgeon in Chief, Boston City Hospital; Associate Professor of Exodontia and Oral Surgery, Tufts College Dental School.

osteomyelitis and other serious consequences.

Three types of fracture have been the most difficult to manage: the condylar fracture (Fig. 1), the fracture in the body of the mandible in the mental region, with six anterior and no posterior teeth present (Fig. 2), and the maxillary fractures (Figs. 3 and 4). Intraoral (Figs. 5 and 6) and extraoral (Fig. 7) interosseous wiring has taken care of the second type, and a new appliance conceived and made by Philip H. White of Boston (Fig. 4) has taken care of maxillary, nasal and malar fractures. The appliance consists of a variable size adjustable head band of metal superimposed on a plaster head cap, to which are attached freely adjustable tubular face-bows accommodating intraoral and extraoral screws, clamps, bands, circumferential wires and splints for anchorage to fracture parts. Traction is obtained and direction is controlled by means of variable triangles and coiled springs with adjustable tension on either side of the head. Although designed primarily for maxillary fractures, the appliance will reduce and fix many types of orbital, malar, nasal and mandibular fractures when conventional methods are inadequate.

The condylar fractures (Fig. 1) are still a question of open reduction, which has many contraindications, or a protracted

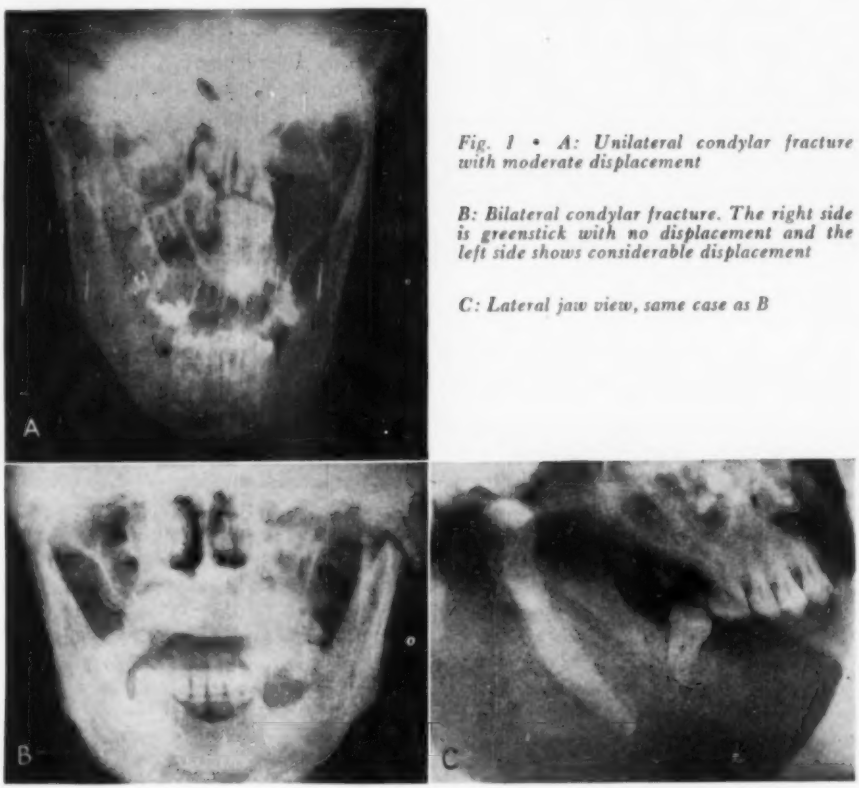


Fig. 1 • A: Unilateral condylar fracture with moderate displacement

B: Bilateral condylar fracture. The right side is greenstick with no displacement and the left side shows considerable displacement

C: Lateral jaw view, same case as B

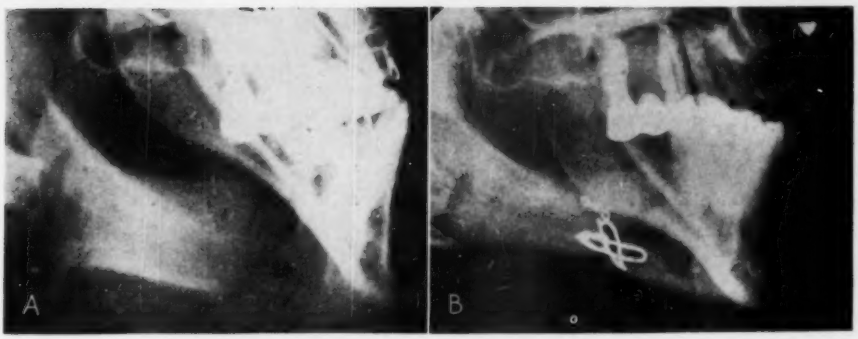


Fig. 2 • Fracture in the mental region. A: Upward pull of temporal, masseter and internal pterygoid muscles causes body of mandible on that side to rise. B: Shows the result of extraoral reduction of this fracture, with interosseous wiring

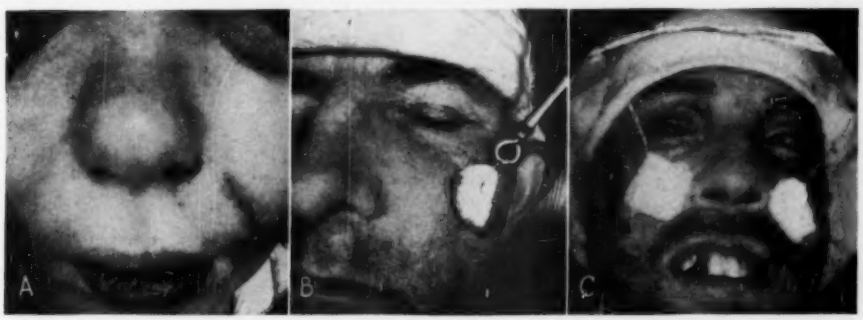


Fig. 3 • Maxillary fractures. A: External appearance of maxillary fracture showing edema, severe ecchymosis and hemorrhage. (Film was Kodachrome.) B: Unilateral maxillary fracture, showing wire attached through cheek to labial arch wire, wired to teeth intraorally, and extended to wire in head cap and a small boat turnbuckle for reduction pressure. Method was very satisfactory. C: Bilateral maxillary fracture

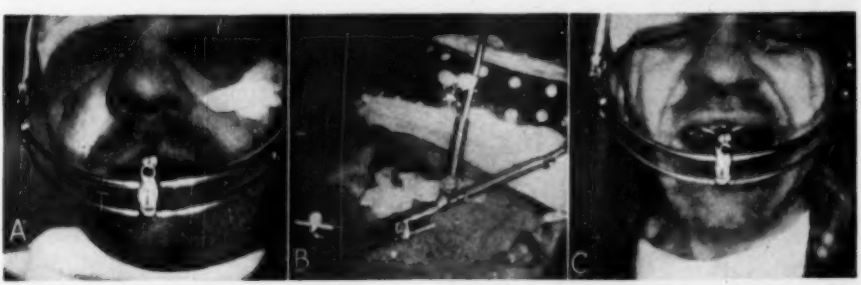


Fig. 4 • Ingenious apparatus of Philip H. White (Boston City Hospital) for reduction of maxillary, mandibular, malar and nasal fractures. Arms and wire attachments can move any bone in any direction. A, B and C are three views of same patient. C shows that patient can move mandible and eat

treatment if perfect apposition of the segments is not obtained in early attempt at reduction by manipulation.

Some complicated cases require orthodontia bands, acrylic splints and other appliances, including skeletal fixation. In some edentulous cases, the full upper and lower dentures may be wired together and the upper and lower central incisors cut out for feeding space and later replaced.

The following predisposing factors should be borne in mind. The mandibular cuspid prominence or curve of the mandible at that point is a structural weakness; the total bony support in the mandibular cuspid area seems relatively less in many cases, possibly because of the buccolingual measurement of the cuspid. This same structural weakness exists in the third molar region, particularly where unerupted or impacted third molars (Fig. 8A) supplant otherwise solid bony structure. The mental foramen (Fig. 8B) presents a structural weakness. Missing teeth (Fig. 9) present structural weakness in cases of trauma through loss of occlusal support. Malocclusion, particularly open bite, also presents a weakness.

For many years it was believed that unless opposing segments of fractures were reduced by contact with cancellous bone, no bony union would ensue. Although this contact is desirable, it is now known that well immobilized contact of healthy periosteum-covered bone can result in bony union.

In the majority of patients numerous

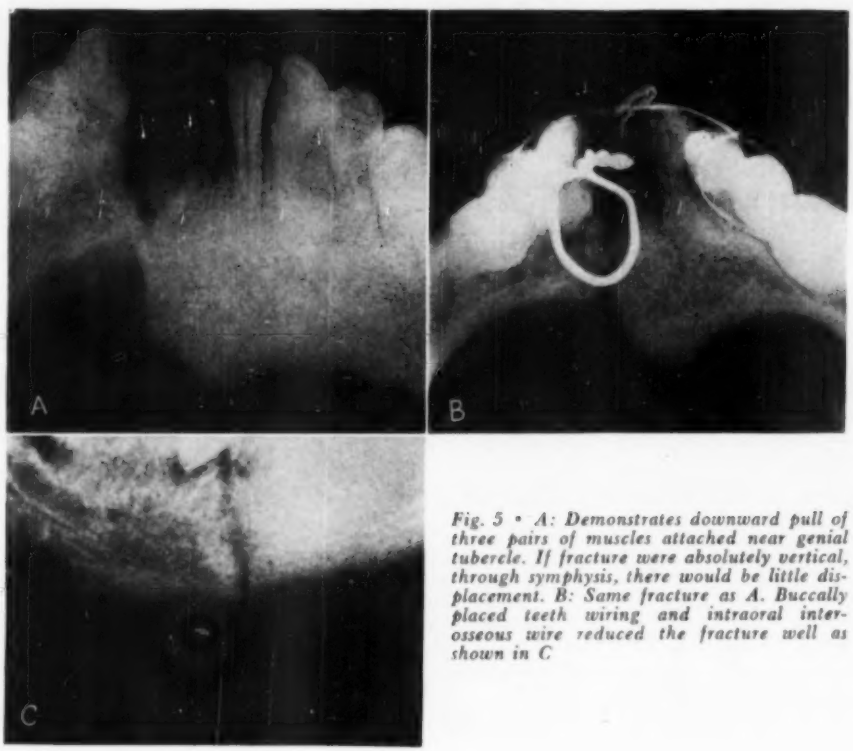


Fig. 5 • A: Demonstrates downward pull of three pairs of muscles attached near genial tubercle. If fracture were absolutely vertical, through symphysis, there would be little displacement. B: Same fracture as A. Buccally placed teeth wiring and intraoral interosseous wire reduced the fracture well as shown in C

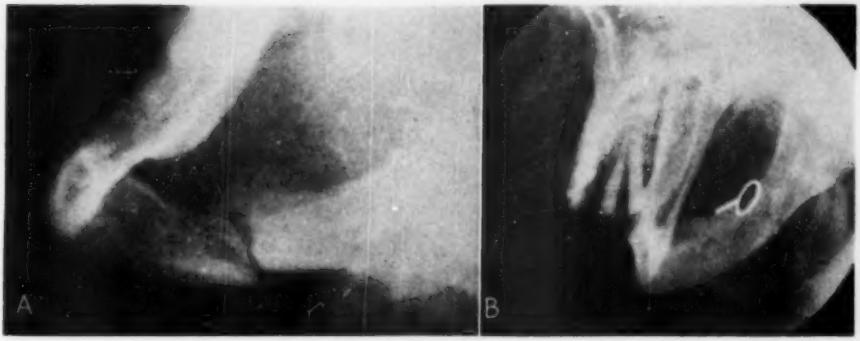


Fig. 6 • A: A suitable case for intraoral or extraoral approach of interosseous bone wiring or metal plating. B: Another case of fracture of an edentulous mandible in a 76 year old woman, reduced by intraoral interosseous wiring

teeth were missing; the more teeth that were missing, the more difficult was the reduction of the fractures. Full dentition (Fig. 10) simplifies reduction of fractures.

Most fractures in this series of cases showed better results when the patients were hospitalized.

Fractures should be reduced as soon after the injury as possible to minimize the possibility of infection. Cases not immediately reduced are further complicated by edema, which makes reduction more difficult. Most fractures in this series were compound.

Very severe hemorrhage was uncommon, even from the inferior dental canal and vessels. The severe hemorrhages were more often found from deep injury to the soft tissue. One case required ligation of the lingual artery; many sutures of the face, lip, tongue and neck were needed in other cases.

In all cases, five roentgenograms were taken; one posteroanterior, one right and one left lateral view of the body of the mandible, and one right and one left lateral view of the ascending ramus of the mandible, to include the coronoid and condyloid processes.

Before reduction of fractures, after extraoral roentgenograms have been carefully studied, intraoral films may be needed to determine the direction of fracture, root and segmental fractures (Fig. 11), complications at fracture site, and even to find a fracture that may not show in the lateral roentgenogram of the jaw (Fig. 12).

Complete blood and urine examinations should be made as soon as possible, and any treatment indicated should be instituted.

Fractures should not be reduced if the patient is in shock. The spinal fluid should be clear for at least 36 hours. In such cases, sometimes simple, partial wiring and elastic traction, placed horizontal, not intermaxillary, may be applied to partially approximate segments.

Before reduction, medication today is usually Demerol Hydrochloride given parenterally one-half hour before reduction, 50 to 100 mg. for ambulatory patients and 100 to 150 mg. for hospitalized patients. The sedative, analgesic and antisialogogic effect with this chemical is excellent.

In cases of severe injury in which concussion or skull fracture is either questionable or evident and yet fixation seems feasible, the fracture may be re-

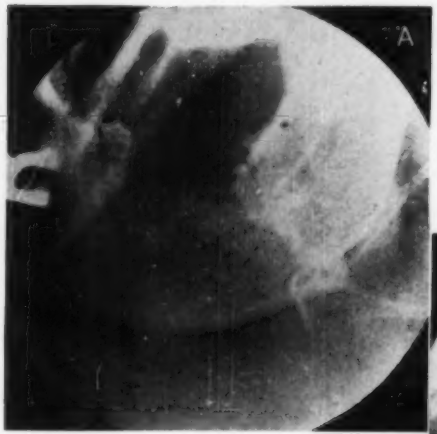
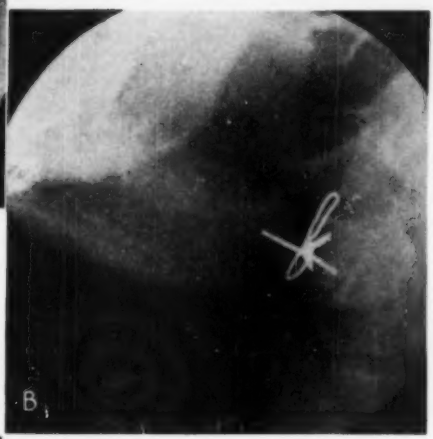
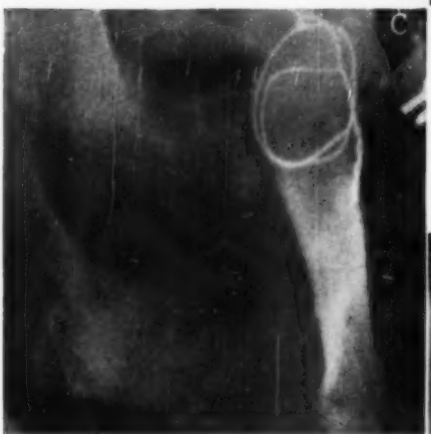


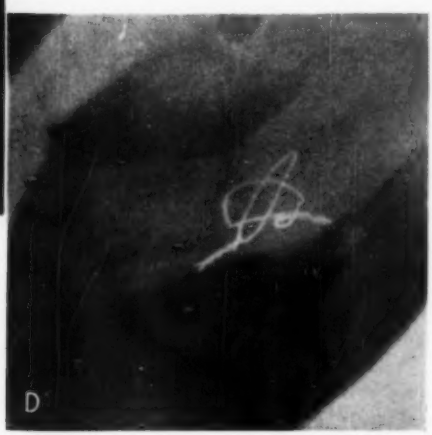
Fig. 7 • Fracture at angle of mandible. A: Shows upward and buccally superimposed distal segment



B: Fracture reduced by extraoral approach



C: Shows simple fracture of opposite jaw which united after immobilization by wiring of one side. Also shows wire enveloping jaw



D: One year after surgical reduction

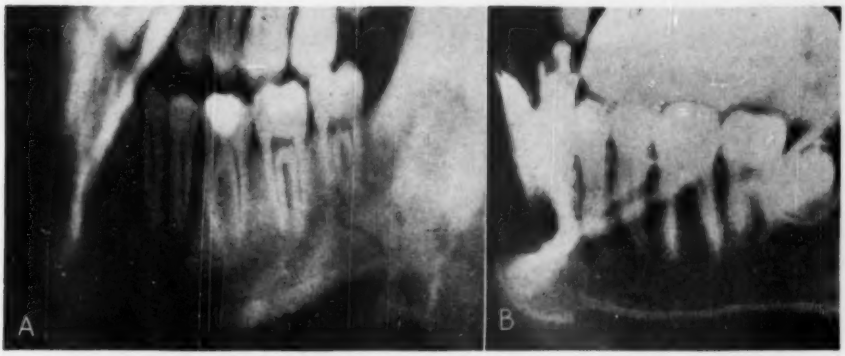


Fig. 8 • A: Double fracture through mandibular third molar. Tooth was retained with good result. Fracture was reduced two hours after trauma. B: Mental region fracture so commonly seen

duced if a competent person is in constant attendance to remove elastics or wires in case of nausea or vomiting.

General anesthesia should not be used, except when an extremely skilful anesthetist and operator team up with the assurance of constant and adequate care after the anesthesia, because of the danger of vomiting and aspiration of the vomitus into the lung. Local anesthesia, after premedication with either Demerol Hydrochloride or pentobarbital sodium

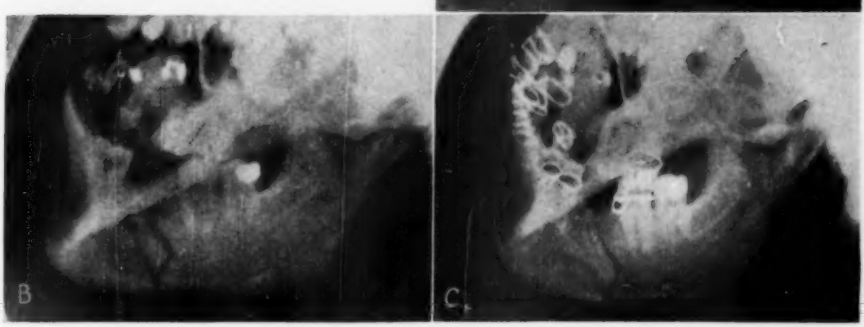


Fig. 9 • Fracture of mandible. A: Loss of teeth presents structural weakness. B: Without reduction, four days later segment displacement has increased. C: Elastic traction was applied horizontally from lower molar to bicuspid, vertically from molar to molar, vertically from bicuspid to bicuspid, and diagonally from lower molar to upper bicuspid and from lower bicuspid to upper molar

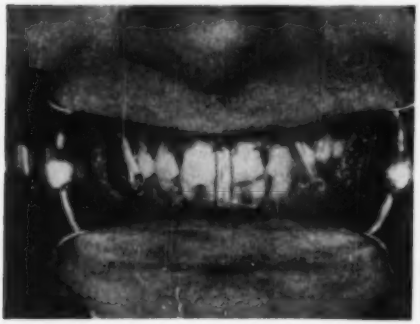


Fig. 10 • Shows rosette type of wire and loop type on anterior teeth

(Nembutal) and atropine sulfate, is generally adequate.

After reducing fracture, we prescribe Demerol Hydrochloride, 50 to 100 mg. parenterally, or the tablet may be crushed and taken in liquid form (with milk or orange juice) for pain and to reduce salivation. Pentobarbital sodium may be required for sleep.

The patient should be instructed not to talk for the first ten days. Communications should be written by the patient to nurses, doctors and friends.

Exposure to thermal changes, particularly cold, or to people with colds should be avoided.

Nasal spray or nose drops containing ephedrine with an additional pleasant nonoily chemical agent should be prescribed. This preparation should be used three to five times a day and particularly at night, before sleep, for better breathing.

Alternate mouth washes with 50 per cent hydrogen peroxide and Metaphen (1:2500 full strength) each hour during the daytime, should be employed for at least five minutes each rinse, to reduce the bacterial content of the mouth.

Until the compound fracture wound in the mouth has completely healed, methylene blue powder is applied at the site of injury once a day on a small pledget of water-wet cotton. It is also good practice to apply methylene blue powder gingivally around a tooth in or near the site of fracture, if that tooth is needed and retained for occlusion.

Interdental wiring with orthodontic elastic traction is generally the method of choice, using small or large Angle S. S. White elastics. In our clinic we have a standardized rule that all fracture wires are always turned clockwise. The reason is obvious. Two methods of winding wires around teeth are employed (Fig. 10): one is the "rosette" type and the other is the so-called "loop" type. The rosette type may be described as a wire that is

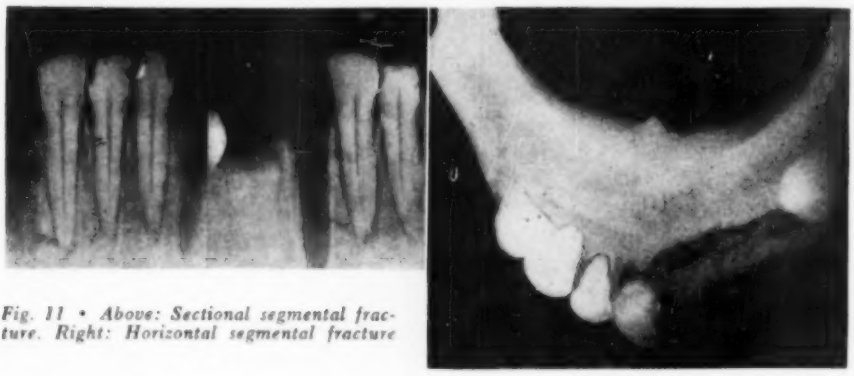


Fig. 11 • Above: Sectional segmental fracture. Right: Horizontal segmental fracture

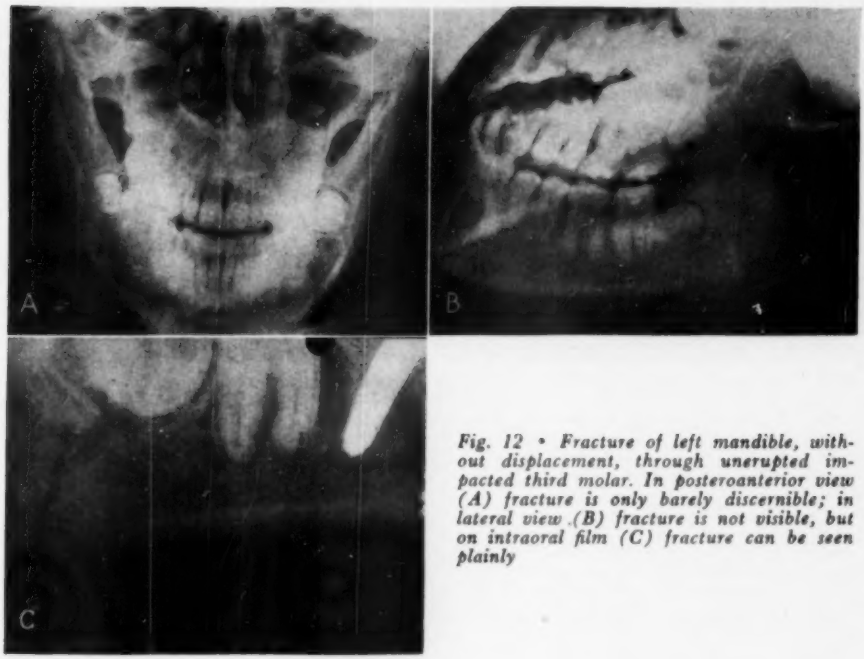


Fig. 12 • Fracture of left mandible, without displacement, through unerupted impacted third molar. In posteroanterior view (A) fracture is only barely discernible; in lateral view (B) fracture is not visible, but on intraoral film (C) fracture can be seen plainly

wound clockwise around and below the greatest circumference of the tooth producing, when tightened sufficiently, a sort of spiral rosette in two or three turns and flattened toward the tooth. This is a good attachment for elastics and is usually used on single teeth. In the loop type a 4-inch wire is folded in half so that a loop on the folded end will be about 3 mm. in diameter and droplet shaped; the cut ends of the wire are inserted between the maxillary right central and lateral incisors and each end is run in opposite directions on the lingual surface of the two teeth and then brought from the lingual to labial surfaces between the approximating teeth so that they now protrude labially. The wire is extended horizontally and distally between the two central incisors, between and through the loop, which extends about ⅛ inch out and away from the central and lateral incisors. The wires are then pulled and the loop wire twisted clockwise about two turns. Extension of the wire is continued to meet the protruding wire between the cuspid and the lateral incisor and the two wires are twisted clockwise to full tightness. The loop is bent upward so that the elastics will be retained. Utility wax may be placed over the rosette type of wire to prevent lip or cheek injury.

Either Barton bandages or a fabric head cap (Fig. 13) may be used in cases in which there are insufficient teeth for adequate support or occlusion maintenance or if the patient is uncooperative.

Certain teeth should be retained temporarily if they are needed for better reduction. A tooth in line of fracture, if the roots are not fractured, may be retained with greater safety today than in the days before chemotherapy and may

be useful in immobilization (Fig. 14).

Infection with alveolar or fracture abscess (Fig. 15A), osteomyelitis (Fig. 15B) and other complications were considerably more prevalent before the discovery of antibiotics. With the sulfonamides, posttraumatic infection was reduced, and with penicillin it has been reduced still further. Only the fractures untreated for a week or more seemed to require extraoral incision.

A syringe with a flexible silver, blunt-ended nozzle point (Yale B-D Lok 3-cc. Becton Dickinson) helps greatly for intraoral irrigation, particularly in remote parts of the mouth. Teeth are cleaned biweekly with rubber cup and pumice. Elastics should be changed biweekly, for cleanliness and maintenance of tension. Routine roentgenograms are taken once a week and more often if an acute condition develops.

Callous union may be expected in about ten days, and bony union is complete in about three weeks if complete fixation without motion is obtained early.

Condylar fractures are the only ones that are difficult to reduce and that are sometimes impossible to reduce, although functional motion of the mandible is not

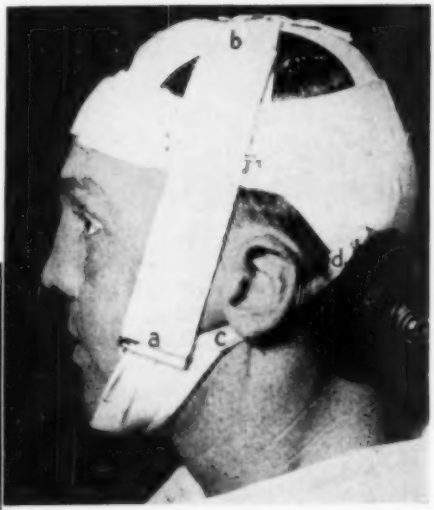


Fig. 13 • Right: Head cap, with elastic strap from chin rest to head cap. Pins may be removed and set in higher or lower position for greater or lesser tension. Pencil marks indicate last position; a to b and c to d are elastic

Left: Tape strings on top of head adjust to head size. These are made in three sizes and are easily changed in size with scissors, needle and thread. Patients like the support and comfort of this type of fracture aid

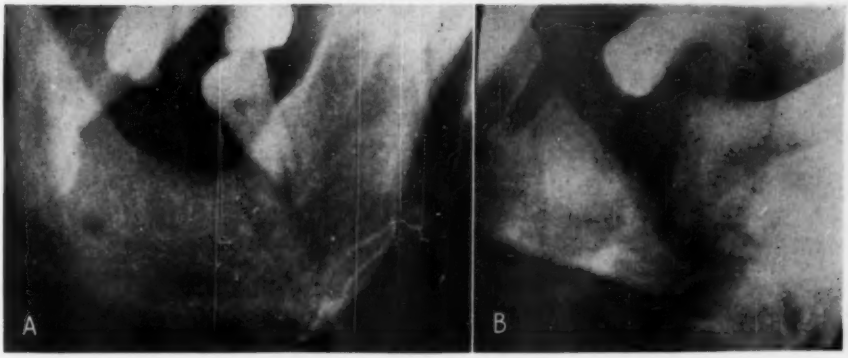


Fig. 14 • Fracture of mandible. A: Even though mandibular molar is in line of fracture its retention, if possible, is important in order to prevent raising of distal segment. B: Fracture similar to A except that molar was knocked out at time of trauma. This fracture was reduced by extraoral interosseous wiring. A pin with hook extraorally set in angle with down and back pull may be used also, but it is not as positive as bone wiring

prevented by lack of approximation of the segments in this type of fracture.

Extremely complicated cases, such as those requiring bone implants, refracture and resetting of fractures, operations for extension or reduction of retruding or prognathic cases, are not included in this report.

Pathologic fractures with extensive necrosis, carcinoma and other complications were also among the cases in this series.

The average patient may be ambulatory in about five days.

Fracture patients must be given a special diet, rich in vitamins A, B, C and D, calcium, phosphorus and iron, and in liquid or "gruel" form. They should eat

Fig. 15 • A: Swelling from fracture abscess. B: Alveolar abscess, osteomyelitis and pathological fracture

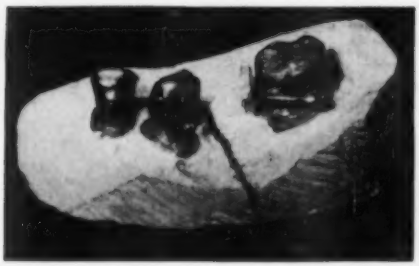


Fig. 16 • Orthodontia bands and hooks for elastic traction or for wire tightening or bending

Fig. 17 • Ascending ramus fracture extending upward through sigmoid notch

frequently, owing to the lack of substantial food and the diminution of their habitual volume intake.

A correct diet, low in carbohydrates and particularly low in fats, but high in proteins, has proved beneficial for 14 years. It is well to have a diet sheet for ambulatory patients and the same diet can be adapted for hospital purposes.

If a general anesthetic is to be administered for extraoral incision and drainage of fracture abscesses, intermaxillary elastics should be removed to prevent aspiration of vomitus in case of vomiting.

The anesthesia of choice in extraoral bone wiring is intravenous thiopental sodium plus nitrous oxide and oxygen by intranasal, endotracheal intubation.

Since 1925, both intraoral and extraoral surgical reduction of fractures by bone wiring or by metal plating have been done entirely by the oral surgery staff. Extraoral reductions are generally done when the injury is posterior to the second bicuspid region and the fracture is intraorally reduced between the biscuspids, anteriorly.

Interosseous bone wires seldom have to be removed. Two in our series were removed because of bone infection, although the infection was not severe. Many are still retained as far as we know. Some are now removed because dentures do not ride well on the tissue with the wires between the bone and the denture. They are generally removed intraorally, with a local anesthetic.

Fractures of the mandible have been seen complicated by sublingual, submaxillary and parapharyngeal infections.

With maxillary fractures complicated by extreme edema, hemorrhage and trauma, it is noteworthy that only one case required a nasoantral opening for drainage, owing to an infected and empyemic antrum. Two cases of fractured maxilla complicated by a cavernous sinus

Fig. 18 • A retained tooth at fracture site and an overreduced fracture, causing overlapping, abscess and osteomyelitis

thrombosis were seen and neither patient died. Both complications were probably caused by immediate complete reduction of maxillary fractures after they had remained untreated for eight to ten days. In maxillary fractures in which nine bones of the skull are in contact with each maxilla and six sinuses are involved, complications may be multiplied.

Orthodontia appliances were used in only two cases of this group because the hospital has no dental laboratory for making bands and wire-loop attachments. If a mechanical laboratory had been available, orthodontic appliances would have been employed more often because they have a definite and useful place in fracture reduction (Fig. 16).

Labial arch wires are occasionally used, but unless they are cut at the site of the fracture, the segments may be kept apart. Circumferential wiring is seldom used, although this method also has value.

A fracture through the ascending ramus, extending up through the sigmoid notch, is reduced in the usual way (Fig. 17).

Figure 18 demonstrates the importance of good roentgenograms. The case illustrated was one of severe trauma, and unsatisfactory roentgenograms did not reveal the presence of a retained whole tooth driven down in the buccal fold. Five days after fracture, severe cellulitis, infection and a high temperature indicated that something other than a short-

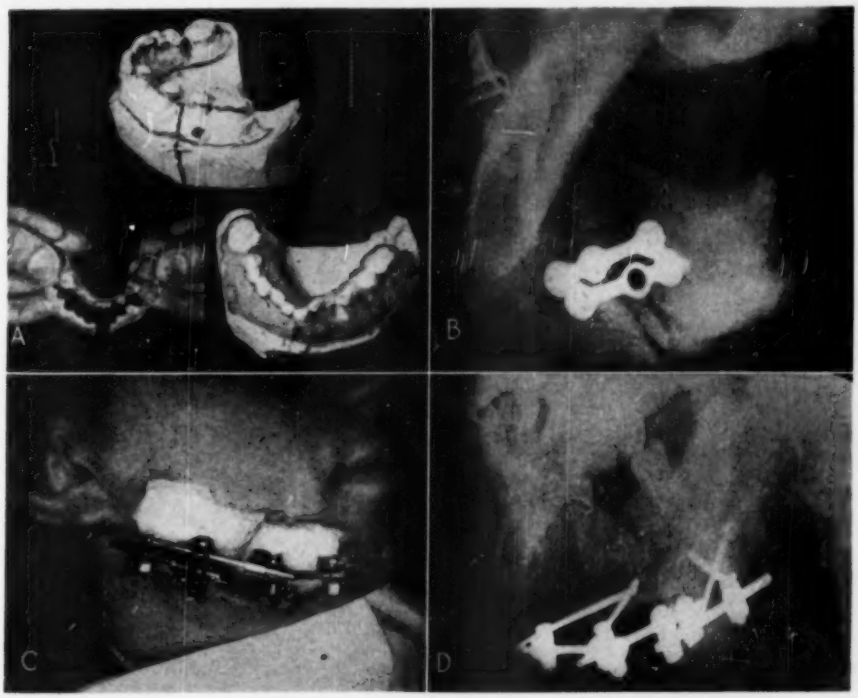


Fig. 19 • A: Stout transparent fracture splint. B: A bad fracture well reduced with vitallium bone plates and screws. C: Skeletal pin fixation. D: Roentgenogram of C

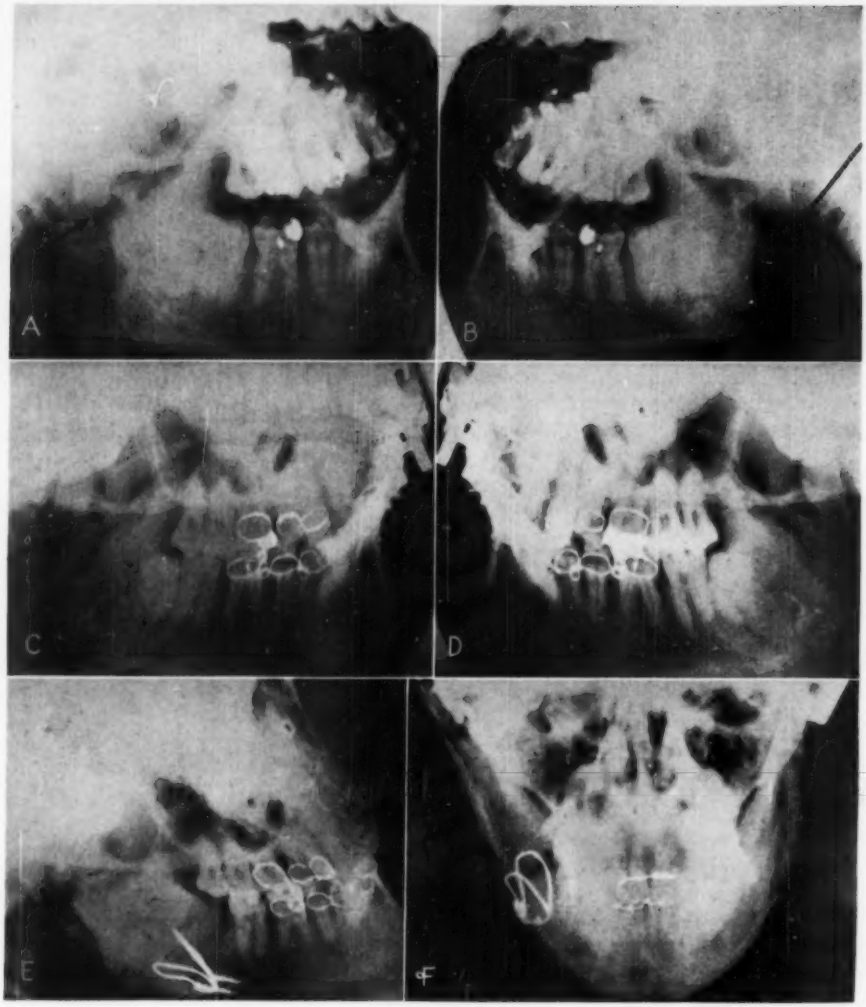


Fig. 20 • Posteroanterior roentgenogram shows bilateral neck of condyle and right angle fracture, with ascending ramus in extreme buccal position from trauma. A: Right lateral view shows superimposition of right ascending ramus at fracture site at angle and neck of condyle fracture. B: Left lateral view shows fracture through neck of condyle and considerable displacement. C: Right lateral view taken 24 hours after attempt at reduction shows traction and teeth maintained in normal occlusion but fractures not reduced. Under pentothal sodium intranasal intubation tracheal anesthesia, the mandible was pulled downward and forward and extreme manipulative pressure was used in attempt to reduce fractures by outside digital force. D: Left lateral view taken at same time as C shows failure on left side to reduce condyle fracture. E: Right lateral view following extraoral approach for interosseous wiring for fracture reduction. The mandibular right third molar seen in A was extracted through extraoral opening. Head of condyle is in better position. F: One week after operation, posteroanterior view shows all fractures in good position

Table 1 • Summary of 1,000 jaw fracture cases divided according to regions involved

Mandibular fractures		885
Single	590	
Symphysis	32	
Right	238	
Left	320	
Double	281	
Bilateral	223	
Right	30	
Left	28	
Multiple	14	
Maxillary fractures		54
Cases without sufficient information		61
Total fracture cases		1,000

ened mandible was complicating the case. The good roentgenogram revealed the cause, but too late to prevent an extraoral incision for drainage of abscess.

The Stout splint also has a place of usage (Fig. 19A). Metal bone plates are used very successfully in selected cases (Fig. 19B). Skeletal fixation (Figs. 19C and 19D) produces excellent results in certain cases.

One case in this report may be of particular interest and record. A youth of 19 who had been in an automobile accident was admitted to the hospital with multiple lacerations, possible skull fracture, concussion and three fractures of the mandible. The necks of both condyles were fractured and considerably out of position, and the right mandible was also fractured just distal to the unerupted impacted third molar. The right ascending ramus was seen by roentgenographic study to be considerably in buccal position, and the mandible showed an open bite in left cusp-to-cusp occlusion. Because of positive findings in the spinal fluid, no attempt was made to reduce the mandibular fracture for nine days (Fig. 20).

The manipulation of the segments in an attempt to obtain normal occlusion was considered before a more radical procedure. The resident anesthetist succeeded in an intranasal and endotracheal intubation anesthesia. By digital, forceful manipulation, an attempt was then made to pull the mandible forward and, holding it in this position, to set the right ascending ramus back to normal position and at the same time, by external digital force, to manipulate the condyle segments into a more nearly normal position. Wires about the teeth with interdental traction held occlusion. Preoperatively, success seemed doubtful, but to attempt the procedure was judged worthwhile because manipulation in some cases has improved the position of the fractured segments. Postoperative roentgenograms showed that, although the left condyle was in better position and occlusion was normal, the right ascending ramus was not in proper position.

One week later, under thiopental sodium anesthesia with nitrous oxide and oxygen administered by intranasal intubation, an open reduction by interosseous wiring of the right angle region was performed. On finding the fracture by extraoral approach, the right impacted third molar was in firm position distal to the second molar. With an elevator, it was

Table 2 • Summary of individual fractures of the mandible

Regions involved	Right	Left	Symphysis	Total
Mental	39	38		77
Angle	38	64		102
Condyle	70	83		153
Notch	1	3		4
Coronoid	4	8		12
Ramus	28	41		69
Between	16	16		32
3rd molar	101	140		241
Between	18	7		25
2nd molar	26	49		75
Between	6	8		14
1st molar	30	29		59
Between	14	13		27
2nd bicuspid	18	15		33
Between	21	14		35
1st bicuspid	7	7		14
Between	6	2		8
Cuspid	56	43		99
Between	17	9		26
Lateral	6	11		17
Between	4	1		5
Central	4	4		8
Symphysis			59	59
Total	530	605	59	1,194

RIGHT MANDIBLE

REGIONS INVOLVED (LEFT MANDIBLE)	CENTRAL	between	LATERAL	between	CUSPID	between	1ST BICUSPID	between	2ND BICUSPID	between	1ST MOLAR	between	2ND MOLAR	between	3RD MOLAR	between	RAMUS	CORONOID NOTCH	CONDYLE	ANGLE	MENTAL	TOTAL CASES
MENTAL												1		1	8		4			2	8	2	26
ANGLE					2	5		1	1	1		1	1		2							2	18
CONDYLE		1	2	1	3		1	1	1	4	3	1			1		1		6	2	8	36
NOTCH																	1					1
CORONOID																					1	1
RAMUS			1	3	6		1		3		2										1	17
between				1				1								7						9
3RD MOLAR			2	1	12	2	1	5	1	1	1				3		2			1	12	44
between														1								1
2ND MOLAR					6	1	1	2	3	1	3		2						1		1	21
between				1										1	1							3
1ST MOLAR											2				1		1					4
between					1										1							2
2ND BICUSPID																			1			1
between											1		1	2					1		2	7
1ST BICUSPID													1		1		2		1			5
between																						0
CUSPID					2						1		2		5		1		6	2		19
between																1				1		2
LATERAL															3				2			5
between																						0
CENTRAL																	1					1
TOTAL CASES	0	1	5	9	35	3	5	10	9	6	14	3	6	6	26	8	13	0	0	22	14	28	223
FRACTURES																							446

Fig. 21 • Locations of double bilateral mandibular fractures

loosened and removed through the intraoral opening. Four holes were made by a bibevelled drill, and 20-gage chrome steel wire reduced this fracture in the angle region. The condyles, although not in perfect apposition, were improved in position, and the patient now has excellent occlusion and a good functioning mandible.

SUMMARY

From Table 1 it will be seen that out of a total of 939 fractures, 885 were of the mandible and 54 were of the maxilla. A total of 590 single fractures were seen, 281 double fractures and 14 multiple fractures. From Table 2 it will be seen that out of 1,194 individual fractures, the third molar regions, with 241 individual fractures, were the most frequently involved, followed by the condyles with 153, the angle with 102, the cuspids with 99, and the mental regions with 77.

Double bilateral fractures of the mandible are summarized in Figure 21 according to the regions involved, and single and double unilateral fractures of the mandible are charted in the same manner in Figure 22.

CONCLUSIONS

From the experience accumulated in treating 1,124 cases from 1919 through 1933, and 1,000 cases from 1934 to March 12, 1948, a total of 2,124 cases, the following points emerge as of particular interest.

1. Complete records should be kept so that valuable information may be available for publication to the profes-

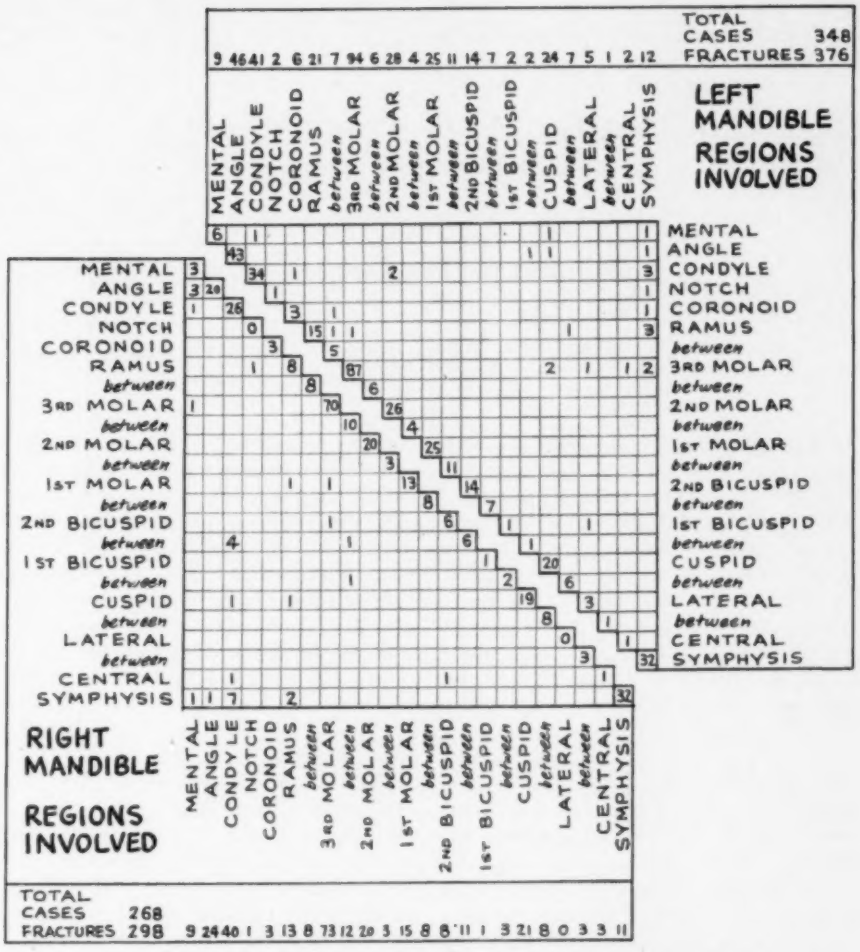


Fig. 22 • Locations of single and double unilateral mandibular fractures

sion and for the good of our patients.

2. General anesthesia should be avoided in the reduction of jaw fractures.

3. Compound fractures of the jaw occur more frequently than simple fractures.

4. Fractures of the mandible occur about 20 times as frequently as fractures of the maxilla.

5. Single fractures occur twice as frequently as double fractures.

6. The mandible may be fractured at any point, although more fractures occur at the angle-third molar region and the mental-cuspid regions than elsewhere.

7. No fractures offer a serious treatment problem except fractures near the neck of the condyle with considerable displacement.

8. No two fractures seem to be exactly alike.

358 Commonwealth Avenue

The effect of a six per cent solution of chromic acid on the gingiva of the albino rat: A correlated gross, biomicroscopic and histologic study

Irving Glickman, D.M.D., and Leif B. Johannessen,† D.M.D., Boston*

In a previous report[1] describing the use of the biomicroscope for the *in vivo* examination of the gingiva of albino rats, it was noted that this instrument reveals a capillary pattern and corpuscle flow in normal gingiva which are not detectable by simple visual examination. Using our initial study of normal gingiva as a background, a second series of experiments was undertaken to evaluate the usefulness of the biomicroscope for the detection of gingival disease. The experiment arranged for this purpose entailed chemical irritation of the gingiva followed at different intervals by correlated gross, biomicroscopic and histologic observations.

A 6 per cent solution of chromic acid was selected as the experimental chemical because preliminary trials indicated that it produced gingival changes which could easily be followed with the methods of this study and because its extensive use in the treatment of gingival disease warranted clarification of its actual effect on gingival tissue.

EXPERIMENTAL METHOD

Ninety young male adult albino rats with essentially unaltered gingiva were used, 45 as experimental animals and the remainder as controls. In the experimental animals, under Nembutal anesthesia, a freshly prepared 6 per cent solution of chromic acid at room temperature was allowed to ooze from a cotton pellet along the labial surface of the lower central incisor into the gingival sulcus and onto the labial gingiva. The cotton pellet was held in position just long enough to permit the chromic acid to reach the labial gingiva. Using the technic described in our earlier report,[1] the gingiva was examined grossly and with the biomicroscope at the following periods after drug applications: immediately, 10 minutes, 20 minutes, 1 hour, 2 hours, and 8 days. In the control animals the same procedure was followed, except that a physiologic saline solution was used instead of chromic acid.

Four experimental and control animals were sacrificed at each of the time intervals, and the anterior portion of the man-

This study was supported by a grant from the Bristol-Myers Company.

*Professor of Oral Pathology and Periodontology, Tufts College Dental School.

†Formerly Research Assistant in Department of Oral Pathology, Tufts College Dental School, now residing in Norway.

1. Glickman, I., and Johannessen, L. B., Biomicroscopic (slit lamp) evaluation of the normal gingiva of the albino rat. J.A.D.A. 41:521 (Nov.) 1950.

dible was removed and prepared for microscopic study.

OBSERVATIONS

By providing correlated gross, biomicroscopic and histologic observations in the course of gingival inflammation it was anticipated that this experimental procedure would make it possible to determine the sensitivity and reliability of the biomicroscope as an indication of underlying histologic changes, and also to determine the effect of a single application of a 6 per cent solution of chromic acid on the gingiva.

EXAMINATION OF CONTROL ANIMALS

Gross, biomicroscopic and histologic examinations made immediately following the application of a physiologic saline solution revealed the following conditions:

Gross Examination • Erythema in the marginal zone was slightly more pronounced than in the submarginal zone. The edge zone was unaltered.

Biomicroscopic Examination • The rate of corpuscle flow was increased. The capillaries were dilated and engorged. Capillaries could be seen in areas which had previously appeared avascular.

Histologic Examination • The capillaries were dilated and engorged.

The reaction lasted from 4 to 6 minutes, at the end of which time the gingiva appeared unaltered clinically, biomicroscopically and histologically.

EXAMINATION OF EXPERIMENTAL ANIMALS

In spite of the fact that the animals were anesthetized, it was apparent from the tongue movements that they were making efforts to remove the chromic acid. However, these efforts were not completely successful. Immediate gross, biomicroscopic and histologic examination revealed the following conditions:

Gross Examination • The edge zone did not show any change. The marginal and submarginal zones appeared erythematous. The erythema was more pronounced in the marginal zone.

Biomicroscopic Examination • The edge zone was unaltered. The capillaries in the marginal zone were more numerous, and engorged with slight nodular bulging at the points of branching. In the areas of bulging, the fine outlines of the capillaries were obscure and the otherwise generalized increased rate of corpuscle flow was arrested. The capillaries in the submarginal zone presented similar changes, but there was less evidence of bulging.

Histologic Examination • The edge zone was unaltered. The histologic changes in both the marginal and submarginal zones were limited to engorgement and dilatation of the capillaries.

Examinations made 10 minutes after the chromic acid was applied revealed the following conditions:

Gross Examination • The edge zone appeared wider and more transparent. The marginal zone was slightly bluish and the sugmarginal zone appeared erythematous.

Biomicroscopic Examination • The edge zone was increased in width. The capillaries in the marginal zone were engorged with pronounced bulging at the points of branching (Figs. 1 and 2 left). Several terminal loops appeared devoid of corpuscles. The corpuscle flow through the marginal vessels was sluggish, and groups of corpuscles appeared clumped together and clung to the capillary walls, especially at points of branching. This clumping and clinging of the corpuscles

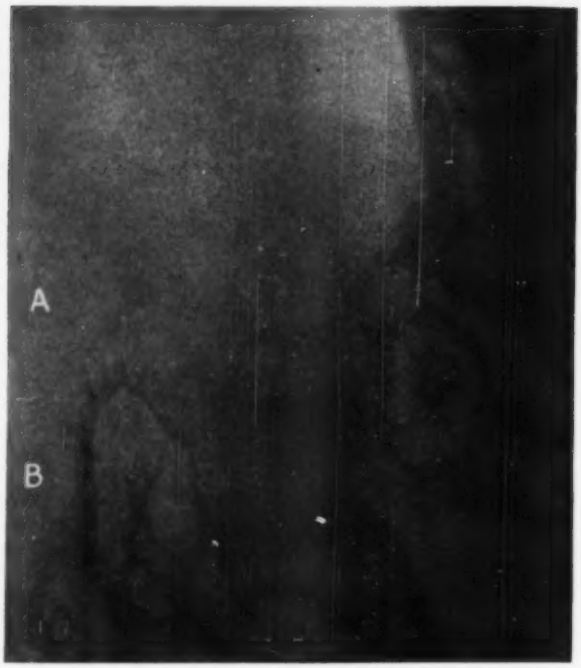


Fig. 1 • Biomicroscopic pattern of normal gingiva showing marginal and submarginal capillaries. A: Terminal loops. B: Engorged capillaries. Original magnification X 31

was associated with stasis and button-like hemorrhages at the terminal loops.

The capillaries in the submarginal zone were markedly engorged and slightly beaded at points of branching. The corpuscle flow was sluggish, but there was no stasis.

Histologic Examination • The edge zone was unaltered. There was engorgement of the capillaries in the marginal zone with slight extravasation of corpuscles. The capillaries in the submarginal zone were engorged.

The findings at the end of 20 minutes were essentially the same as those observed after 10 minutes.

At the end of one hour the findings were as follows:

Gross Examination • The outline of the edge zone was rough and irregular. The pale pink stippled appearance of the marginal and submarginal zones was replaced by a gray dullness.

Biomicroscopic Examination • The edge zone was irregular and the outline blurred. The tooth surface in relation to the edge zone presented a minutely granular surface layer of pin point adherent brown debris (Fig. 2 right). In the marginal zone only a few irregularly shaped hemorrhagic blotches were seen; no capillaries could be observed. Only faintest suggestions of the submarginal vessels could be discerned.

Histologic Examination • The labial gingiva was shortened and distended. The epithelium of the edge zone was slightly degenerated with some surface desquamation. There was thickening of the outer and inner epithelium with ab-

sence of surface keratinization in the former and loss of cellular outlines in the latter. The capillaries in both the marginal and submarginal zones appeared flattened and obscured. Occasional perivascular leukocytes were seen. The connective tissue core was edematous. The normal clear-cut outlines of the collagen fibers were obscured. The connective tissue cells appeared increased in number and several hyperchromic nuclei could be seen (Figs. 3 and 4).

Examination at the end of two hours revealed the following conditions:

Gross Examination • The edge zone and upper part of the marginal zone appeared as a hemorrhagic sloughing mass. The remainder of the marginal zone and entire submarginal zone presented a brownish discoloration.

Biomicroscopic Examination • The outline of the edge zone could not be demonstrated. The capillaries in the marginal zone were reduced in number and presented varying degrees of tortuosity and engorgement (Fig. 5). Isolated capillaries were observed which terminated in hemorrhagic patches, and the escape of corpuscles from these vessels could be seen. The submarginal capillaries were engorged and several vessels presented stasis at points of branching. The corpuscle rate was sluggish throughout.

Histologic Examination • The edge zone and the upper part of the marginal zone were necrotic. Marked capillary dilatation with extensive hemorrhage was seen in the remainder of the marginal zone (Figs. 6 and 7 left). The labial epithelial layer of the gingiva was thinned and degenerated. The inner epithelial lining and central epithelial core were edematous with vacuolar degeneration of the individual cells (Fig. 7 center). The connective tissue in both the marginal and

Fig. 2 • Biomicroscopic pattern. Left: 10 minutes after application of chromic acid showing bulging and engorgement at points of capillary branching. Right: One hour after application of chromic acid showing granular debris on tooth surface and absence of capillaries. Small hemorrhagic blotches are seen along margin. Original magnification X 31

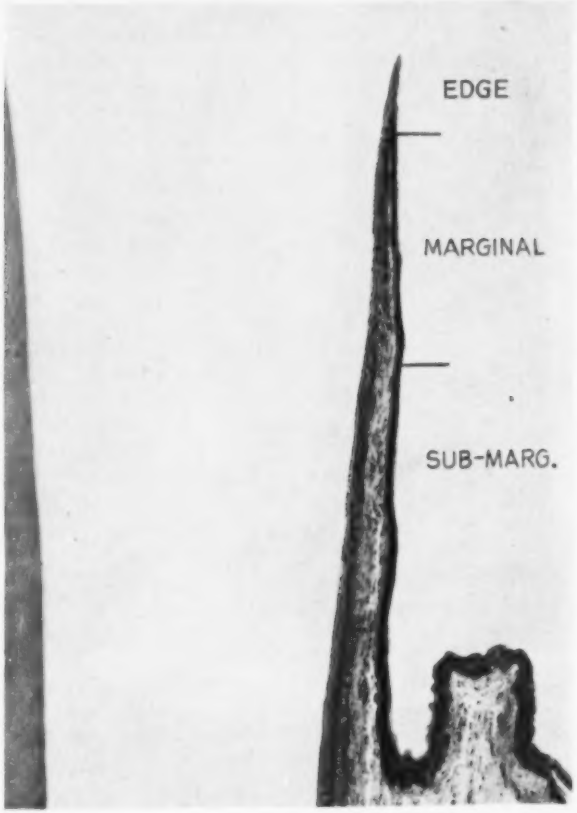


Fig. 3 • Normal labial gingiva showing avascular edge zones, central connective tissue core and outer and inner epithelial surfaces. Hematoxylin and Eosin. Original magnification X 50

submarginal zones presented edema with collagen degeneration and pyknosis of the fibrocytes. The capillaries were irregular in outline and engorged (Fig. 7 right). Many small hemorrhages were seen in the marginal zone.

In the course of the period between the 2 hour and 8 day intervals, the following gross observations were made. The sloughing at the gingival margin extended throughout the marginal and submarginal zones almost down to the mucobuccal fold. The gingivae were apparently painful, and the animals showed signs of difficulty upon eating.

Examinations at the end of eight days revealed the following conditions:

Gross Examination • The gingiva was reduced in height. There was no evidence of necrotic tissue. A thin film-like projection from the lower half of the submarginal area covered part of the tooth surface normally occupied by the marginal gingival zone.

Biomicroscopic Examination • The capillaries differed from the normal in that there were fewer in number and they appeared irregular and slightly tortuous, and some areas were beaded. The rate of corpuscle flow was slower than the normal, but more rapid than that in the sluggish circulation described in the 1 and 2 hour post-treatment intervals (Fig. 8).

Histologic Examination • There was a mass of necrotic debris next to the tooth surface midway between the gingival margin and the mucobuccal fold. Adjacent to this mass and separating it from the remainder of the gingiva was a multicellular thickness of proliferating epithelium (Figs. 9 and 10). Subjacent to the necrotic mass, proliferating connective tissue, epithelium and endothelium forming capillaries could be seen. A finger-like gingival extension projected upward from the region of the necrotic debris. This was continuous with the underlying gingiva and consisted of a central connective tissue core enclosed within outer and inner stratified epithelial surfaces. The inner epithelial surface was continuous with the epithelium adjacent to the necrotic debris.

RECAPITULATION AND DISCUSSION

The gross gingival changes produced by a single application of a 6 per cent solution of chromic acid consisted of erythema and edema which were followed within 2 hours by marginal necrosis. These changes differed markedly from the transitory hyperemia which resulted

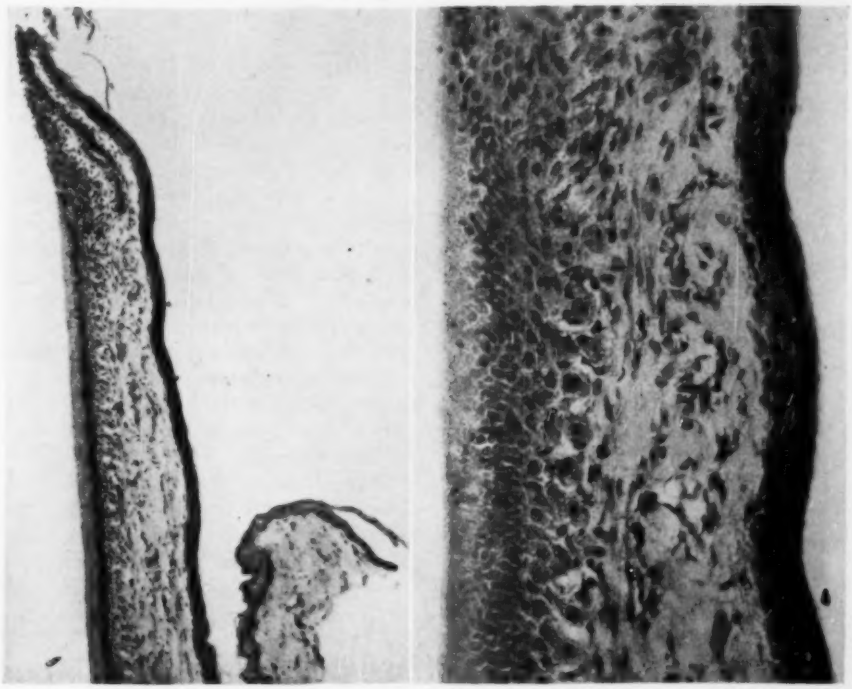


Fig. 4 • Labial gingiva one hour after chromic acid application. Left: The connective tissue core is widened and edematous. The inner and outer epithelial surfaces are slightly thickened. Right: Greater magnification showing edema of connective tissue with loss of fibrillar outlines and increase in connective tissue cells. The thickened outer (right) and inner epithelium with absence of surface keratinization in the former and loss of cellular outline in the latter are also seen. Hematoxylin and Eosin. Original magnification X 250

Fig. 5 • Biomicroscopic pattern two hours after application of chromic acid showing comparative absence of capillaries in marginal zone and tortuous engorged capillaries with button-like hemorrhages in the submarginal zone. Hematoxylin and Eosin. Original magnification X 31

from a single application of physiologic saline solution.

The biomicroscope was effective in delineating changes in capillaries and corpuscle flow which preceded the necrosis in the chromic acid treated animals, but could not be detected by gross examination. The biomicroscope also revealed the formation of a network of new capillaries in the course of gingival healing. In most instances the biomicroscopic findings gave some indication of the underlying histologic capillary changes.

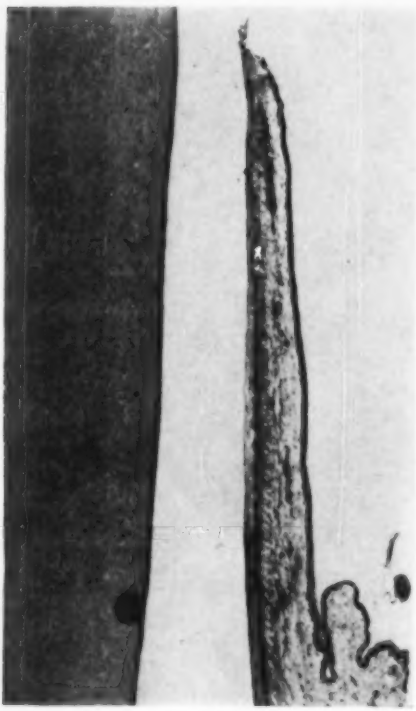


Fig. 6 • Labial gingiva two hours after application of chromic acid showing necrosis at tip with underlying edema and degeneration. Hematoxylin and Eosin. Original magnification X 50

The biomicroscope revealed an initial increase in the number of detectable capillaries in response to chemical irritation. It is reasonable to assume that the biomicroscopic impression of additional capillaries in the marginal gingiva resulted from the activation of capillaries which were not in use previous to irritation. This finding points to the existence of a capillary reserve as an early gingival defense to local irritation.

The early capillary changes were followed in 10 minutes by pronounced engorgement and tortuosity of the capillaries, reduction in the rate of capillary flow beyond the normal and pin-point hemorrhages. Clumping of corpuscles and

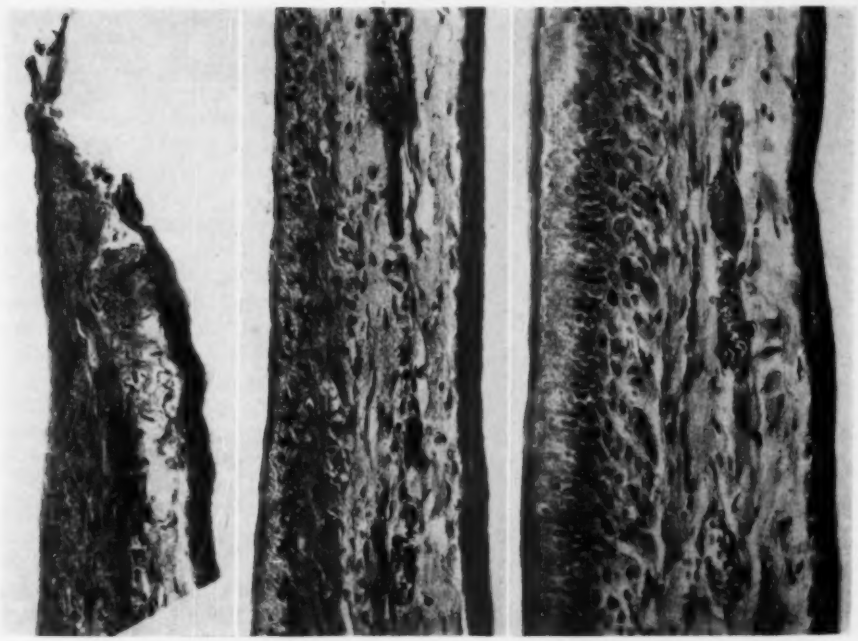


Fig. 7 • Detailed Figure 6. Left: Necrosis and sloughing of tip of labial gingiva. Center: Marginal zone of labial gingiva showing edema and degeneration of connective tissue, engorged capillaries and scattered leukocytes. Right: Submarginal zone of labial gingiva showing edema and degeneration of connective tissue with engorged capillaries. Hematoxylin and Eosin. Original magnification X 250

clinging to the capillary walls consistent with the sludged blood phenomenon[2] associated with inflammation also were seen. At the two hour interval, with the onset of necrosis, the biomicroscope revealed the altered appearance of the gingival surface in considerable detail, but did not contribute to the impression which could be gained by gross examination.

The injurious effect of a single application of 6 per cent chromic acid upon healthy gingiva warrants attention. The hyperemia, inflammation, degeneration

2. Kniseley, M.; Block, E. H., and Warner, L., Sludged blood. Science 106:431 (Nov. 7) 1947.

Fig. 8 • Biomicroscopic pattern of healing gingiva showing network of new capillaries. Original magnification X 31

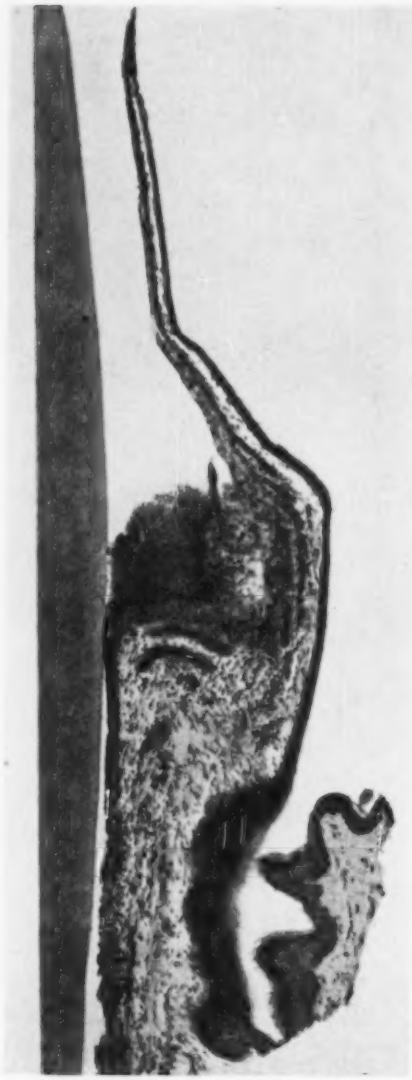


Fig. 9 • Labial gingiva eight days after application of chromic acid showing necrotic debris and formation of shortened new gingival height. Hematoxylin and Eosin. Original magnification X 50

and necrosis all occurring within two hours following its use were striking findings, especially in view of the fact that the experimental procedure did not entail mechanical trauma to the gingiva and permitted the dilution of the chromic acid by the saliva. It is possible that in this experiment prolongation and intensification of the initial necrotizing process induced by the chromic acid may have resulted from secondary bacterial infection. However, there was no microscopic evidence of such bacterial complication. Even if there were such a secondary bacterial effect, it does not seem likely that it can be construed as detracting from the severity of the initial destructive change induced by the chromic acid.

The regenerative changes observed at the eight day interval after chromic acid application are of interest. Although the contour of the labial gingiva was apparently restored, the gingival margin was considerably lower than the normal level. This discrepancy between the normal gingival height and that attained by the reparative processes was demonstrable by gross, biomicroscopic and histologic findings. Determination of the detailed time sequence in gingival repair following chemical irritation would entail the control of temporal and local factors not within the scope of the present study. However, the findings indicate that proliferation of epithelium and connective tissue is an important feature of gingival repair. It would seem that in view of its necrotizing effect upon viable gingival tissue, repeated applications of chromic acid would constitute an effective obstacle to gingival repair.

The findings suggest that some use may be found for the biomicroscope in the clinical diagnosis of gingival disease. Changes in capillaries and corpuscle flow when properly evaluated might serve as criteria for the detection of systemically induced gingival alterations which hitherto have been unrecognized be-

cause they were of insufficient severity to produce notable clinical gingival disease. With the biomicroscope it may be possible to differentiate between uncomplicated cases of marginal gingivitis and those in which underlying capillary alterations exist as predisposing or aggravating factors. However, considerable additional experimentation devoted to the interpretation of biomicroscopic findings is required before the instrument can be used in the routine diagnosis of gingival conditions.

Several technical factors limit the use of the biomicroscope. The intensity and direction of the light source and movement of the subject alter the biomicroscopic appearance of the capillaries. Because of these variables it is extremely difficult to obtain consistent photographic records of the changes actually observed in the binocular microscope. Corpuscle flow could not be photographed with equipment used in this study. Improved photographic facilities, an optical system which permits greater magnification and infra-red illumination might be of assistance in this connection.

CONCLUSIONS

A correlated gross, biomicroscopic and histologic study of the effect of a single

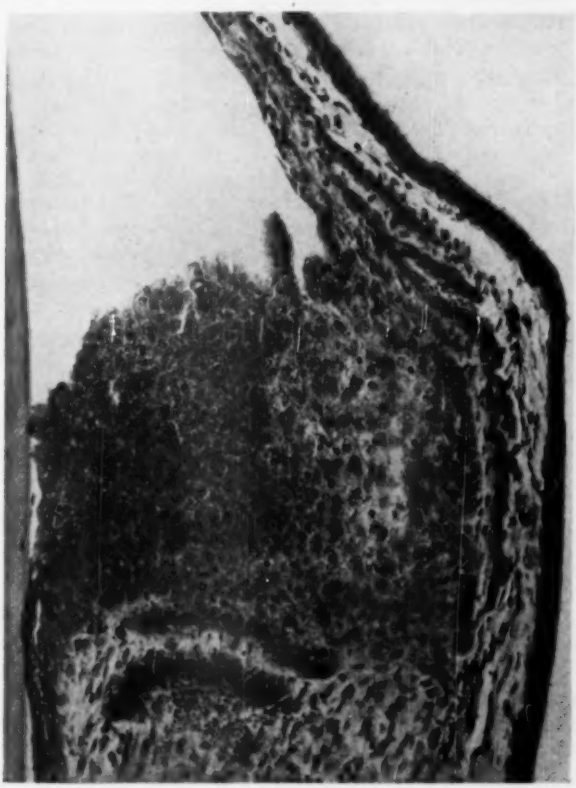


Fig. 10 • Detailed Figure 9 showing proliferating epithelium separating necrotic debris from adjacent gingiva. Note continuity of gingival projection (top) with underlying connective tissue and epithelium. Hematoxylin and Eosin. Original magnification X 250

application of 6 per cent chromic acid upon the gingiva of the albino rat has been presented.

The biomicroscope reveals alterations in capillaries and corpuscle flow in response to chemical irritation which are not detectable by gross examination.

It has been demonstrated that chromic acid produces degeneration and necrosis of the gingiva within two hours after a single application. Gingival repair following a single application of chromic acid results in incomplete restoration of the pre-existent gingival level.

The use of 6 per cent chromic acid in the treatment of gingival disease is discouraged.

It is suggested that further studies dealing with the interpretation of biomicroscopic findings are required before the instrument is considered for routine diagnosis of gingival disease.

The effect of irradiation on the dental system as demonstrated by the roentgenogram

Karl W. Bruce, D.D.S., and Edward C. Stafne, D.D.S., Rochester, Minn.

The present concept concerning the effect of irradiation on the dental tissues is being disseminated ever increasingly by the radiotherapist and dental diagnostician.

The first observation pertaining to this subject was made by Récamier and Tribondeau[1] in 1905 when they noted underdevelopment in the teeth and skull of a kitten on the side which had been exposed to roentgen rays. More recently, important data that have cast light on the developing dentition have been noted in man. Case reports which feature the roentgenographic portrayal of the effects of irradiation on the teeth have been submitted by Stafne and Bowing,[2] Rushton,[3] LaCronique, Béal and Goudaert,[4] and Brown.[5] On the basis of roentgenographic evidence, the following effects of irradiation of dental structures were among those noted by the foregoing authors: destruction of the tooth germ to the extent that the tooth would no longer form; dwarfing of the entire tooth, or its root alone, depending upon its stage of development at the time irradiation therapy was begun; premature completion of calcification of certain teeth which had received irradiation in the process of development; and the possible premature eruption of teeth which were exposed to irradiation.

Section on Dental Surgery, Mayo Clinic.

1. Récamier, D., and Tribondeau, L. (Quoted by Desjardins, A. U.). Osteogenic tumor: growth injury of bone and muscular atrophy following therapeutic irradiation. Radiology 14:296 (Mar.) 1930.

2. Stafne, E. C., and Bowing, H. H., The teeth and their supporting structures in patients treated by irradiation. Am. J. Orthodont. & Oral Surg. (Sec. Oral Surg.) 33:567 (Aug.) 1947.

3. Rushton, M. A., Effects of radium on the dentition. Am. J. Orthodont. & Oral Surg. (Sec. Oral Surg.) 33:828 (Dec.) 1947.

4. LaCronique, G.; Béal, G., and Goudaert, M., Influence de la radiumthérapie sur la calcification des germes dentaires. Revue de Stomatolog. 48:541 (Aug.-Sept.) 1947.

5. Brown, W. E., Jr., Oral manifestations produced by early irradiation: report of a case. J.A.D.A. 38:754 (June) 1949.

The following case reports pertain to five patients who were seen in the dental section of the Mayo Clinic. They had received some form of irradiation therapy for lesions in the proximity of the dental apparatus in infancy. The dental examination of each patient was not done at a preconceived interval but rather at a time when the complaints of the patient or the patient's parent focused attention on the teeth. These cases will serve to complement and re-emphasize some of the points of notation pertaining to the effect of irradiation on the dental tissues as were observed in the cases reported by Stafne and Bowing,[2] and others.

REPORT OF CASES

Case 1 • A white girl underwent radium therapy that began at 8 weeks of age and extended over a four-year period for a hemangioma of the right side of the face and scalp.

Dental roentgenograms were made when the patient was fifteen years of age (Fig. 1). They revealed that the effects of irradiation were confined mainly to the teeth of the right maxillary arch. There was absence of both right maxillary bicuspids and the right permanent mandibular second molar tooth. The region in which these teeth develop had received irradiation prior to the beginning of calcification. The permanent right maxillary cuspid was dwarfed and the roots of the maxillary central incisors, right maxillary lateral incisor and right maxillary first molar were dwarfed. The roots of the mandibular right first molar were likewise dwarfed; however, there was little if any dwarfing of the roots of the remaining teeth in the right mandibular arch.

As would be expected, the effects of irradiation on the dental apparatus in Case 1 were confined chiefly to the right side of the face to which radium therapy was administered. The possible reason that the maxillary teeth were more affected by irradiation than were the mandibular teeth was the fact that the radium packs were in more intimate association with the maxillary teeth owing to the location of the lesion. The effects of irradiation on the permanent teeth are understandable, in that the arrested development coincided with the period of time at which the teeth affected were undergoing development.

Case 2 • A white girl was treated with radium for a hemangioma of the right cheek, the right side of the soft palate, the right tonsil, the right half of the tongue and the posterior wall of the

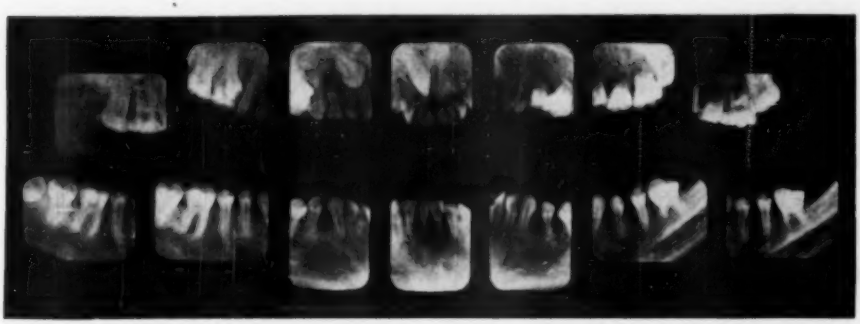


Fig. 1 • Dental roentgenograms of a 15 year old girl who had received radium therapy on the right side of the face and scalp in infancy

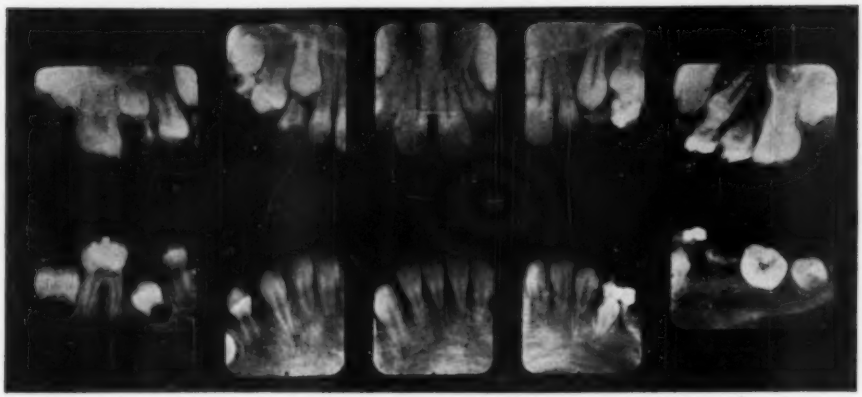


Fig. 2 • Dental roentgenograms of a girl aged 8 years and 10 months who had received radium therapy in infancy for a hemangioma on the right cheek, soft palate, tonsil, tongue and pharynx

pharynx. Treatment began at 6 months of age and extended over a period of 37½ months.

Dental roentgenograms were made at 8 years and 10 months of age (Fig. 2). In this case the effects of irradiation on the dentition were limited chiefly to the teeth of the mandible. The right maxillary and mandibular second bicuspids were missing. The unerupted right mandibular first bicuspid and the unerupted right mandibular permanent second molar were visibly dwarfed. Dwarfing of the roots of the following permanent teeth was noted: all mandibular incisor teeth, both mandibular cuspid teeth, the permanent right mandibular first molar and the permanent right maxillary first molar tooth.

The roentgenogram revealed also that calcification of the roots of the mandibular cuspids and right mandibular first bicuspid teeth was approaching completion, as was indicated by the tapered form of the roots of these teeth and the closure of the apical foramens. Root calcification normally is not completed in these teeth until the ages of 12 to 14 years. In this instance, calcification had been completed three to four years earlier than would have occurred without the influence of irradiation.

In both Cases 1 and 2, the effects of irradiation involved those teeth that were in the beam of irradiation and that were undergoing development during the course of treatment.

Case 3 • A white girl was treated with roentgen rays directed through both cheeks for a lymphangioma of the tongue and upper lip. Treatment began at 22 months of age and extended over a period of six and a half months. The anterior two-thirds of the tongue was further treated with radon seed implantations one and a half years after the last roentgen ray treatment.

Dental roentgenograms made at the age of 6 years revealed no agenesis of teeth (Fig. 3). It was unfortunate that the second molar regions were not included in the roentgenogram, therefore, any disturbance of these teeth which might have taken place could not be noted. The crowns of all permanent bicuspid teeth were markedly dwarfed, yet interestingly enough, retained the normal form of bicuspid teeth. The roots of the mandibular central incisors and perma-

nent mandibular first molar teeth were dwarfed.

Premature development was exemplified in the instance of the mandibular central incisor teeth and the permanent mandibular first molar teeth where the tapered form of the roots indicated completed calcification or an approach to that end at the age of 6 years. In these teeth, root calcification either had been completed or had approached completion at least three years prior to the normal time for its occurrence.

Case 4 • A white girl was treated with roentgen rays for a lymphangioma of the right side of the soft palate and posterior third of the adjacent hard palate. Treatment was initiated at 2½ years of age and extended over a period of two and a half years. The technic employed was such that crossfire beams were directed at the lesion from various portals of entry through the right and left cheeks, lips and submaxillary region.

Dental roentgenograms made at 7 years of age disclosed no missing teeth in the field surveyed by the roentgenogram (Fig. 4). The third molar area was not included sufficiently for a statement to be made pertaining to any alteration in development, as may have occurred there.

All the permanent second molars and the permanent second bicuspid teeth, with the possible exception of the mandibular left second bicuspid, were dwarfed. The roots of all the incisor teeth, all the permanent first molar teeth and all of the permanent maxillary cuspid teeth were dwarfed.

Premature completion of calcification of teeth was noted in all permanent incisor teeth, all permanent first molar teeth and all permanent maxillary cuspid teeth. The roots of these teeth demonstrated a tendency toward a closed apex which would indicate completion of root calcification.

Root formation in the teeth mentioned was almost complete at the age of 7 years. The normal age for completed root calcification in maxillary central incisors is 10 years, maxillary lateral incisors 11 years, maxillary cuspids 13 to 15 years, mandibular central incisors 9 years, mandibular lateral incisors 10 years, and

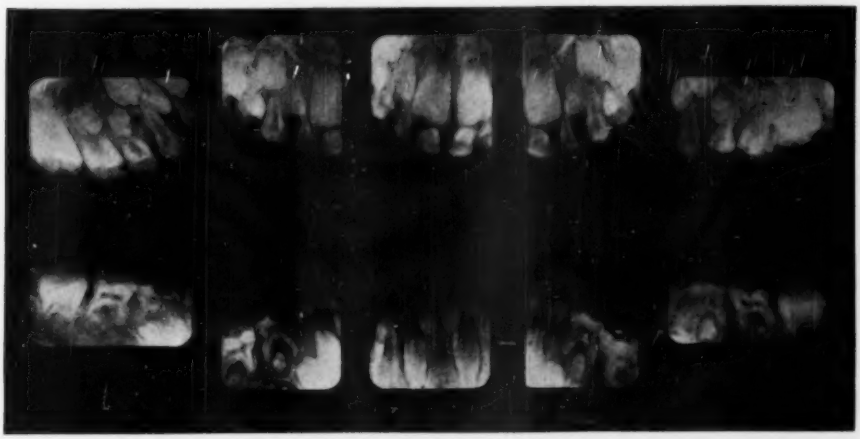


Fig. 3 • Dental roentgenograms of a 6 year old girl who received both roentgen ray therapy and radon seed implantation in infancy for a lymphangioma of the tongue and upper lip

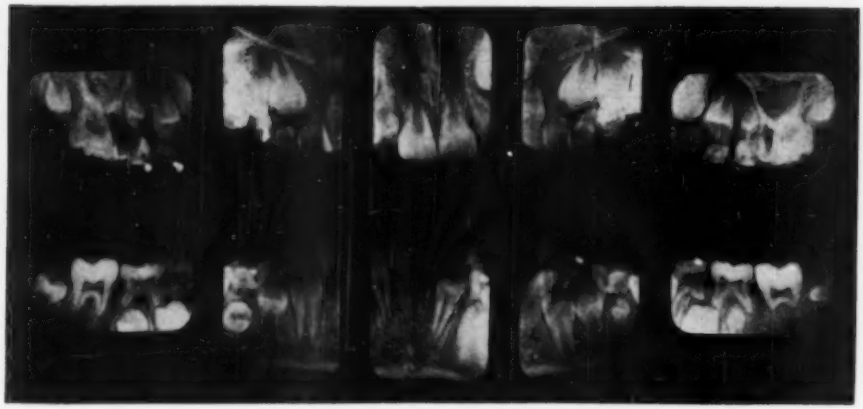


Fig. 4 • Dental roentgenograms of a 7 year old girl who had received roentgen ray therapy in infancy for a lymphangioma of the right side of the soft palate and posterior part of the hard palate

maxillary and mandibular permanent first molars 9 to 10 years.

Case 5 • A white boy was treated with low-dosage radium therapy for a hemangioma located on the left cheek, the left upper lip and the lower left eyelid. Treatment was initiated at 2¾ years of age and extended over a period of four and a half months.

Dental roentgenograms made at 9 years of age disclosed that all permanent teeth within the scope of the roentgenogram were present (Fig. 5). On roentgenographic comparison between the right and left permanent maxillary in-

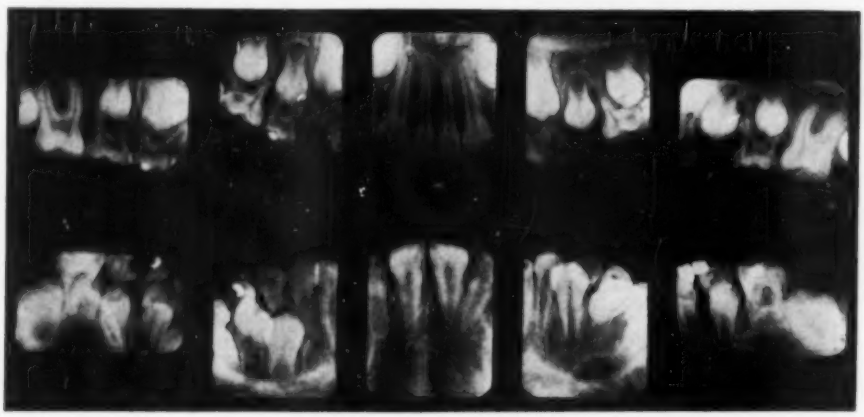


Fig. 5 • Dental roentgenograms of a 9 year old boy who had been treated with roentgen rays at 2¾ years of age for a hemangioma on the left side of the face

cisors, cuspids and bicuspids it was observed that root development was taking place more rapidly in the teeth mentioned on the left side. This again was evidenced by the tendency of the roots of the teeth on the left to taper and constrict at the apex to a greater extent than was true of the afore-mentioned teeth on the right. It was evident when comparing the maxillary right and left central and lateral incisors that the apexes of the roots of the left central and lateral incisors were almost completely constricted, whereas the apexes of the roots of the same teeth on the right were open.

The roentgenogram also demonstrated a tendency toward premature eruption of the cuspid and bicuspid teeth on the left. This was apparent when a comparison was made between the cuspid and bicuspids on the left and those on the right side of the maxillary arch.

The changes seen in Case 5, which were confined to the teeth of the left maxillary arch, were minimal and undoubtedly were caused by a small dose of irradiation delivered to the dentition coincidental to treating the lesion on the left cheek, left upper lip and left lower eyelid.

SUMMARY AND CONCLUSIONS

We have reported five cases in which irradiation affected the dental system, as demonstrated by the roentgenogram. Each patient received irradiation therapy in infancy for a pathologic process occurring in proximity to the developing dentition. Either roentgen ray, surface radium packs or radon seed implantation was used as the source of irradiation. Dental examination and roentgenograms were made at a time when the complaints of the patient centered attention on the dentition. The roentgenographic findings in the five cases presented were, for the most part, similar to those reported previously by Stafne and Bowing.[2]

From the evidence revealed by the roentgenograms in these five cases, it would seem reasonable to assume that irradiation (1) can injure a tooth germ to the extent that a tooth will not form, (2) causes dwarfing of permanent teeth, (3) effects dwarfing of the roots of permanent teeth that are undergoing development during irradiation, (4) effects premature completion of calcification of permanent teeth and (5) may cause early eruption of permanent teeth.

Cancer Research • Cancer is one of the most important problems of public health in the United States. Cancer, a group of diseases manifested by abnormal growth and behavior of cells, is also an engrossing biological phenomenon. For these reasons, the problem of cancer has attracted ever-growing concern and interest of the public and scientists.

It has been realized that the solution of the cancer problem can be reached only through research. Cancer research is not a discipline separate unto itself, but depends upon simultaneous and coordinated efforts of many scientific disciplines. Its progress is stimulated by fundamental advances in the basic sciences. Cancer research, in turn, makes its contributions to the wider areas of biology, biochemistry and related sciences. *Michael B. Shimkin, "The University of California Program in Cancer Research," California Medicine 73:297 September 1950.*

The knife-edge lower ridge

Robert Schermer, D.D.S., Cleveland

The knife-like ridges of the mandibular arch are a great hardship on the patient who is about to wear a lower denture, and also on the dentist who is to construct it. The knife-like ridges impose undue pressures causing instability of the denture and discomfort to the wearer.

A wide, firm ridge will make a better foundation, which is needed to support a lower denture. However, it is frequently necessary to make dentures for patients with knife-edge ridges. Often, these ridges are unusually high and thin; they also are inclined to be irregular or bumpy and to have spicules protruding from them. Many times the oral surgeon is able to trim the ridges, and make a better foundation for the impressions. However, where the surgery is not performed because of the patient's refusal to have it done, the age and debility of the patient or some systemic condition or disease, another method must be found to help the patient master his dentures.

Modern dentistry has provided us with a method of dealing with these knife-edge cases. The procedures outlined here are for those patients who have not been able to wear dentures constructed out of hard resins.

Generally the impressions are made in the usual way, and the ordinary steps are taken, except for packing the case. Here a soft resin is used in those areas where resiliency is desired. The tissue surface may also be made completely out of this elastic resin, with the hard acrylic over it.

PROCEDURE

The following procedure is recommended:

1. The denture base is packed in the regular manner (hard acrylic).

2. After trial packing, if only small areas need to be relieved, the portion of the base resin which is to be reproduced in the elastic resin may be cut away. However, if a complete tissue surface of elastic resin is to be made, a double thickness of cardboard is soaked in water, and applied to the cast in the same way as for a baseplate. The flask should be closed and a trial separation made. The excess pushed out by the cardboard is cut away leaving a void when the cardboard is removed.

3. The elastic resin is mixed into a soft paste. (Directions are given by the manufacturer.)

4. The elastic resin is immediately packed into the cavities prepared for it, or onto the complete tissue surface, where a void has been made by the double thickness of cardboard (3 to 5 mm.). The excess is trial packed and trimmed from the remaining denture. Then, tin foil is used as a separator to obtain a smooth surface. The flask should be closed tightly for processing.

5. The flask is transferred from the bench to the spring clamp and processed in a water bath of 160°F to 165°F for one and one-half hours, then transferred to boiling water for an hour.

6. The flask is cooled to room temperature by bench cooling it for an hour and placing it in tap water for one-half hour.

7. The denture is removed from flask and finished.

8. Finishing soft or elastic resin is done by means of a sandpaper cone or disks. Very little finishing usually is needed. The surface should never be heated by fast polishing.

The advantages of this type of restoration are: (1) nonirritating to the mucous membrane, (2) ease in molding and processing, (3) ease in reproducing fine detail, (4) easy to clean with soap, water and handbrush, (5) flexible enough so that it will not irritate spicules and will prevent sore spots, (6) quick return to form after distortion, (7) light in weight and durable, (8) considerable load and tension before rupture and (9) long retention of elastic properties.

The disadvantages are: (1) it may harden with age, (2) it wears faster than hard resins and (3) it is more porous.

CONCLUSION

This type of restoration, constructed out of an elastic or soft resin, is ideal for the knife-edge lower ridge. It will not only give the patient comfort but it also may be used as an interim treatment until the patient learns to master his dentures. At a later date, the denture may be rebased.

The patient must be instructed in the care of these dentures, and not expect them to last more than two years. The dentures may be repaired, relined, or rebased, if necessary.

380-381 The Arcade

Occlusion: a cardinal consideration

Blair C. Madsen, D.D.S., Miami, Fla.

Occlusion is of cardinal consideration in operative dentistry, prosthodontics, orthodontics and periodontics. Because the subject is so basic and fundamental, it has been said that "dentistry is occlusion."

Many restorative appliances, apparently superb, are destined to failure because of functional disharmony. Their failure may be attributed primarily to lack of recognition by the dentist of a condition known as "acquired centric occlusion." Temporomandibular dysfunction, destruction of arch form and periodontoclasia may be the inevitable result of some seemingly excellent restorations if no cognizance is taken of the tremendous forces which are brought into play in these acquired centric occlusion cases.

Many dentists fail to recognize the lack of correlation between centric relation and centric occlusion. Centric relation is defined as the relation between the condyle and its fossa. Centric occlusion is defined as the relation between the cusps and the opposing fossae of the teeth when the jaws are closed.

A vast number of patients will demonstrate the presence of an acquired centric relation if they are examined properly but they will not do so voluntarily. A satisfactory method of ascertaining the presence of an acquired centric relation is to place the tip of the index finger, with slight pressure posteriorly, on the lower anterior teeth. The patient is then instructed to close and tap the teeth

lightly on the inclined finger tip. Sufficient time should be allowed for the patient to relax. When the operator feels that the patient's jaws are in centric relation he should instruct the patient to touch the teeth lightly together while the dentist maintains slight pressure on the labial surface of the lower anterior teeth. When questioned, the patient readily will point to the area where contact is first felt. A fine dry grit may be used on the lower teeth during this first testing to intensify the feel of the first contact. The presence of the grit also prevents the patient from fully closing the teeth together. The first contact which the patient feels is described as a premature contact in centric relation. By drying the teeth on the side involved, placing carbon paper between the teeth and carefully repeating the procedure just described, the point of premature contact will be revealed. With the aid of a proper wax bite registration, study casts can be mounted quickly on an analyzer devised by S. W. Brown[1] which will enable the operator to determine the exact location of the primary premature contact.

Because it is so difficult to demonstrate mechanically the lack of correlation of centric relation and centric occlusion on casts or in the mouth, the author has devised a working model which serves to illustrate the mechanical principles involved (Fig. 1). The model is composed of Prexiglas. The maxillary and temporal portions are bolted to a black base. The mandibular portion which is free to move in any direction, is held in contact with the temporal portion by means of vertical rubber bands. These bands exert sufficient pressure to keep the condyle in its fossa. The outlines of the teeth have been routed in and painted black. The upper second molar is removable and plastic teeth with varying inclines can be inserted in the opening. The central and lateral incisors are held in place by a bolt through the back which allows them to be forced forward. A posterior spring tension holds them in position. The amount of forward movement can be measured on the scale by the displacement of the needle, which is attached to the central incisor. The premature contact which was observed and marked in the mouth on the lower second molar is indicated by the arrow in Figure 1. Contact is felt by the patient, yet the bite is still open as indicated by the position of the needle on the scale and the position of the condyle in the fossa (Fig. 1). In order to achieve full closure the mandible must slide protrusively from the point of interference into an acquired centric occlusion (Fig. 2). Almost simultaneously two undesirable factors occur: The mandible is thrust forward by the incline plane sufficiently to move the upper incisors anteriorly 1 mm. as the teeth attain full closure and the head of the condyle is disarticulated and thrust to the posterior part of the fossa. Normally the mandible closes from rest position to full closure by a typical hinge-like movement. There should be no forward displacement of the mandible or disarticulation of the temporomandibular joint, yet the model illustrates how one incline plane in premature contact can produce both of these undesirable factors.

UNDESIRABLE FACTORS

Factor 1 • G. V. Black,[2] in his tests of 1,000 patients with the use of the gnathodynamometer, discovered that the average patient could exert 171 pounds of vertical pressure in the molar area. In examining the incline planes that are in premature contact on the model it will be found that they are approximately at a 45° angle. Therefore, according to the

1. Brown, S. W., Disharmony between centric relation and centric occlusion as a factor in producing improper tooth wear and trauma. D. Digest 52:434 (Aug.) 1946.

2. Black, G. V., Operative Dentistry, Vol. 1. Chicago: Medico-Dental Publishing Co., 1924, pp. 161-171.

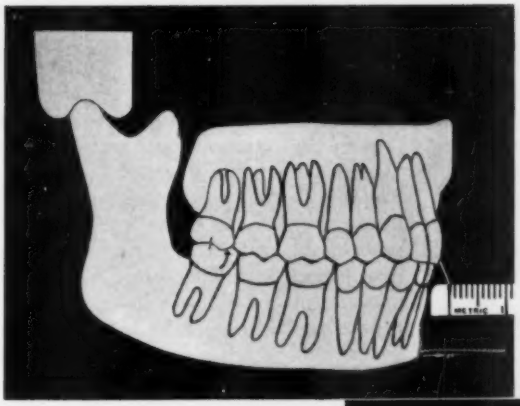


Fig. 1 • Working model. Arrow indicates location of premature contact in the second molar area. The bite is open as indicated by the position of the needle on the scale and the position of the condyle head in the fossa

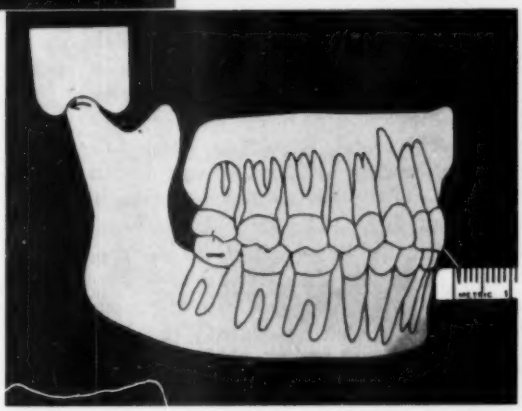


Fig. 2 • To achieve full closure the mandible must slide protrusively from the point of interference into an acquired centric occlusion as indicated by the needle and the position of the condyle head

laws of physics pertaining to the incline plane and by the use of simple trigonometry it will be found that this average pressure of 171 pounds, functioning along a 45° interfering incline plane, will produce a secondary horizontal displacement force (anteriorly) of 171 pounds. Proof of this statement lies in the fact that the vertical and horizontal components of a 45° triangle are equal. Interfering incline planes of greater degree result in greater pressures and horizontal displacement, reaching as high as 350 pounds for a 67½° angle. It is this constant tremendous mesiodistal stress that ruins arch form, destroys the supporting structures and results in ultimate loss of the teeth.

Factor 2 • Gray,[3] Cunningham,[4] Piersol,[5] Morris[6] and Harris[7] have described the temporomandibular articulation. According to Harris[7] "there is a definite position of the condyle in the glenoid fossa when the mandible is in centric relation, and that position is in the anterior part of the fossa, never in the posterior. This is a

3. Gray, Henry. Anatomy, Descriptive and Surgical. Philadelphia: Lea Brothers & Co., 1897, pp. 560, 728, 734.

4. Cunningham, D. J., Text-Book of Anatomy. New York: William Wood & Company, 1930, pp. 150-152.

5. Piersol, G. A., Piersol's Human Anatomy. Philadelphia: J. B. Lippincott Company, 1930, p. 2151.

6. Morris, Henry, Human Anatomy. Philadelphia: P. Blakiston's Son & Co., 1899.

7. Harris, Elam, Centric relation of the mandible. J.A.D.A. 37:565 (Nov.) 1948.

fundamental principle. The reactions evoked when the condyle is forced to intrude on this area furnish an interesting field for research. The condyle is provided with an armor consisting of the capsule, disk, meniscus and synovial sacs. All this constitutes a bulky plunger, and one wonders whether it would be possible for a pressure of a hydraulic type to be directed through the petrotympanic fissure into the middle ear."

Pressure in the posterior part of the fossa on the anterior tympanic artery and the auriculotemporal nerve also may affect the middle ear and be responsible for many cases of neuralgia. Acute symptoms of this temporomandibular dysfunction usually consist of pain in the ear or temporomandibular joint. Chronic symptoms usually consist of cracking or snapping of the joint. In such cases the path of the condyle has been altered by an exostosis of the bone caused by trauma of long standing.

CLASSIFICATION OF PREMATURE CONTACTS

Premature contacts in centric relation may be classified as follows: (1) primary premature contacts and (2) secondary premature contacts. Secondary premature contacts may be further subdivided into: (a) unilateral deviation contacts and (b) locked cusp contacts. There is never more than one primary premature contact. An unlimited number of secondary premature contacts may be encountered before all of the protrusive slip is eliminated and correlation of centric relation and centric occlusion is complete.

CORRECTION OF PRIMARY PREMATURE CONTACTS

The method used to detect the primary premature contact with carbon paper, as previously described, now may be repeated. A mental note should be made of the upper and lower areas involved. The carbon paper should be placed between the teeth and the patient instructed to close the jaws until he feels the first contact. He should be instructed to hold the jaws in that position for a moment then to close the teeth together completely. The original pin point marking will then have extensions on them, indicating the path of the glide from the first point of interference to full closure. The patient now has placed his jaws in the acquired centric position which he has learned to assume and which is strictly a position of convenience. This position has been described by McLean[8] as "eccentric intercuspation" or the improper interdigitation of cusps.

In these acquired centric relation cases there is no true centric closure available. There is no physiological rest position. A state of muscular imbalance exists because the mandible is continually working between the forces of these incline planes and the action of the temporomandibular joint with its muscular attachments. The periodontium and the arch form will break down before compensatory changes can occur in the temporomandibular joint.

Primary premature contacts almost invariably occur on a distal incline plane of the lower tooth involved and on a mesial incline plane of the upper tooth involved. Sometimes, on first examination, the primary premature contacts may seem to be on other incline planes, but when viewed in proper perspective on the casts, the path of the glide on the lower tooth is always on a distal incline plane of a cusp and the path of the glide on the upper tooth is always on the mesial incline plane of a cusp. The interference caused by primary premature contacts may be corrected by grinding the cusps along the lines indicated by the carbon paper (Fig.

8. McLean, David W., Diagnosis and correction of pathologic occlusion. J.A.D.A. 29:1202 (July) 1942.

3). The reduction should be made from the cusp peak, which is the point of first contact, toward the termination of the carbon marks near the fossa. The object of the grinding is to make the distal and mesial planes, which strike first in centric relation, approach horizontal planes. All cusps should be on an arc of the normal hinge axis, as dictated by the temporomandibular joint.

The beneficial results obtained by reducing the two interfering planes on the model are illustrated in Figure 4. The upper and lower teeth may be tightly closed without any protrusive slip. There is no displacement of the upper anterior teeth and there is no disarticulation of the temporomandibular teeth. Centric relation and centric occlusion have been correlated and the teeth close completely with a sharp click which is characteristic of a good occlusion.

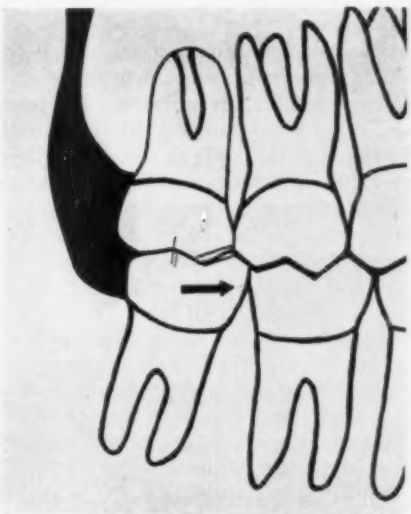


Fig. 3 • Location and method of correcting primary premature contacts. Correction by reduction is made along lines indicated on the cusps. Arrow indicates direction of displacement

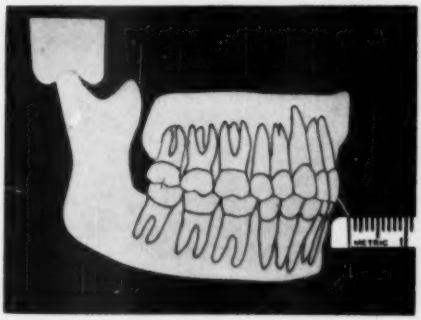


Fig. 4 • Centric relation and centric occlusion properly correlated as indicated by the position of the condyle and the position of the needle on the scale

CORRECTION OF SECONDARY PREMATURE CONTACTS

Under actual conditions in the mouth it may be found that the protrusive slip will not be eliminated by the reduction of the first interfering planes. In such cases the original process of checking and grinding should be repeated. Determine the new location of the first contact, obtain the premature marking, study its glide pattern and again reduce the interfering planes on the two teeth involved. This procedure should be continued until all of the teeth meet simultaneously and all protrusive slip is eliminated.

Unilateral Deviation Contacts • Unilateral deviation contacts may be encountered in attempts to obtain a correlation between centric relation and centric occlusion. This type of contact occurs on the lingual incline planes of buccal cusps or the buccal incline planes of lingual cusps and will produce a noticeable lateral shift of the mandible to the right or left as the teeth close from the point of first contact to full closure. These premature contacts are located and reduced in the same manner as previously described and should present no great difficulty.

Locked Cusp Contacts • Carbon markings in the base of a fossa indicate the presence of a locked cusp contact. Such contacts should be relieved. All cusps in opposing fossae should have slight freedom of movement, similar to the action of a mortar and pestle. Individual posterior teeth showing excessive areas of resorption, or producing a feeling of excessive pressure or pain should be relieved. A fine pointed stone should be used carefully to deepen the fossa as indicated by the arrow in Figure 5. This treatment will reduce the pressure on the supporting structures and allow the teeth freedom of movement. The proper centric contact will be maintained by this procedure and reciprocating contacts developed on the teeth involved. The buccolingual stress will be equalized and the carbon markings will appear as indicated by the bars shown in Figure 5. This method of discriminate and precise cusp reduction will not close the bite. In fact, by preventing protrusive slip and relieving locked cusps it actually will open the bite anteriorly, thereby eliminating anterior and posterior trauma in centric occlusion.

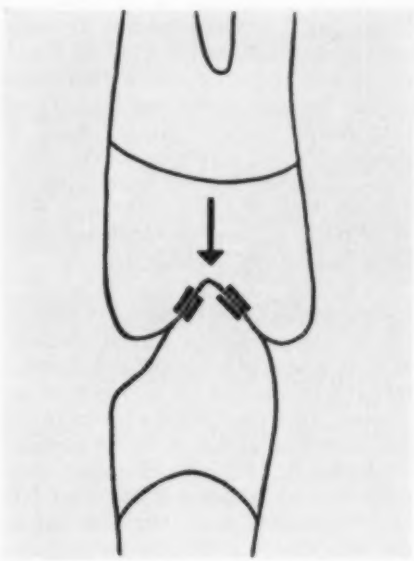


Fig. 5 • Correction of locked cusp contacts. Fossa indicated by arrow should be deepened permitting the establishment of reciprocating contacts as indicated by bars

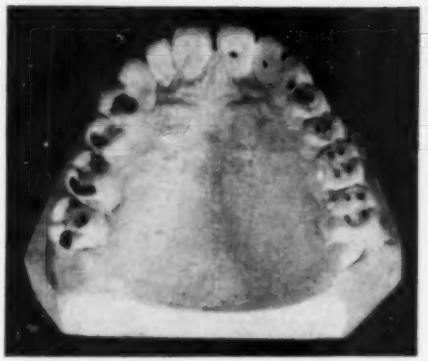


Fig. 6 • Elimination of locked cusp contacts permits the development of a definite pattern of markings in centric relation

When locked cusp contacts have been eliminated on all teeth a definite pattern of carbon markings in centric occlusion will begin to appear (Fig. 6). Instead of hodgepodge markings as seen on the left of Figure 6, definite reciprocating markings appear as shown on the right. Cuspid contact generally results, which is highly desirable if excessive mobility exists on any of the posterior teeth.

J. C. Westbrook, Jr.[9] has described a pattern of occlusion which equalizes buccolingual pressures in centric occlusion. From this basic pattern he creates ball and plane contacts which materially reduce lateral stress. By obtaining wax bites and study casts before starting and after completing the correction the operator can determine what he has accomplished for the patient (Figs. 7A and B).

9. Westbrook, J. C., Jr., A pattern of centric occlusion. J.A.D.A. 39:407 (Oct.) 1949.

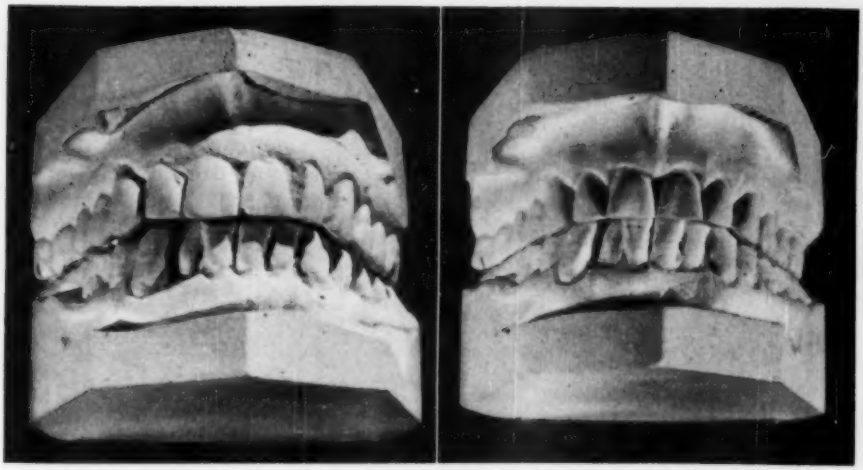


Fig. 7 • A: Before correction of interfering premature contacts. B: After correction

If the corrections were concluded at this point much would have been accomplished for the patient. However, further aid can be given the patient by relieving the traumatic effects which are produced by the excursive movements of the mandible.

CORRECTION OF EXCURSIVE INTERFERENCES

Anterior Excursive Interference • Figure 8A illustrates the initial interference encountered on the cuspids and lateral incisors in right lateral excursion. The

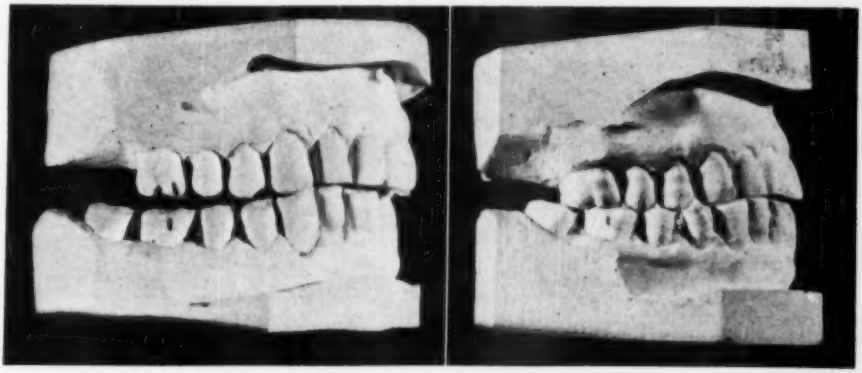


Fig. 8 • A: Interference in right lateral excursion. The posterior teeth are disengaged and the cuspids and incisors traumatized. B: Improved condition following correction of interference

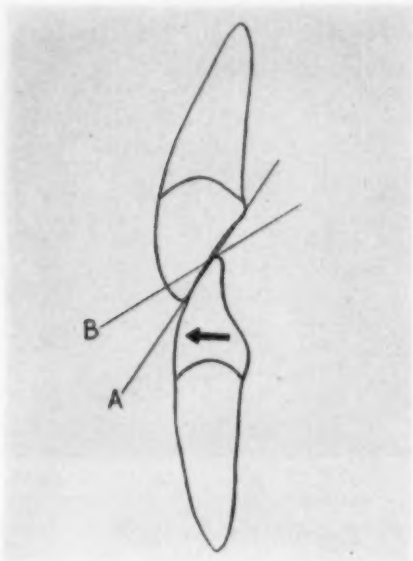


Fig. 9 • Correction of anterior excursive interferences. Arrow indicates direction of movement

traumatic effects on the teeth and the recession of the soft tissue are plainly visible. Figure 8B illustrates the improved condition after the initial excursive interferences were eliminated. In correcting excursive interferences the following technic is recommended. Register centric markings by using red typewriter ribbon (no. 10 ink). Use blue carbon paper to show the paths of the excursive movement. Make all excursive corrections away from the red centric markings. Clyde H. Schuyler[10] states:

> Interference in excursive positions is not due to the prominence of centric points, but to disharmony of guiding inclines on the opposing tooth surfaces.

In correcting the cuspid and incisor interferences caused by right lateral excursions (Fig. 9) the steep incline (A), on which the lower cuspid travels must be reduced to incline (B). This reduction must be made on the upper cuspid from the red centric mark to the termination of the blue mark. The lower cuspid should not be ground as that will take it out of occlusion. It will later extrude and again be in traumatic position. Relieving the upper cuspid, as described, will permit the posterior teeth to come into effect in lateral excursion and enable them to relieve the stress on the anterior teeth. By using the red ribbon to register centric relation on the posterior teeth, followed by blue carbon paper to register the lateral excursive movement all lateral excursion interferences on the posterior teeth can be eliminated safely.

Posterior Interferences • In Figure 10, the small vertical arrows indicate the areas in the fossa that have been, or should be reduced to eliminate locked cusp contacts. The bars on the occlusal surface of the two teeth indicate the red centric marks used to register centric relation. The large heavy arrow indicates the direction of movement. The blue lateral excursion marks showing along

10. Schuyler, Clyde H. Fundamental principles in correction of occlusal disharmony, natural and artificial (grinding). J.A.D.A. 22:1193 (July) 1935.

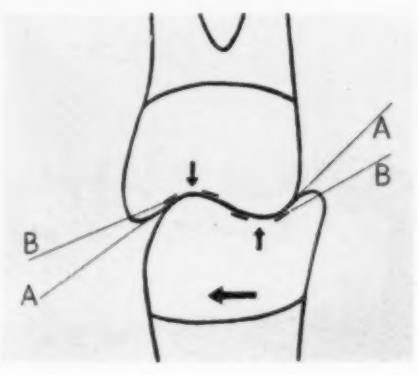


Fig. 10 • Correction of posterior excursive interferences. Arrow indicates direction of movement

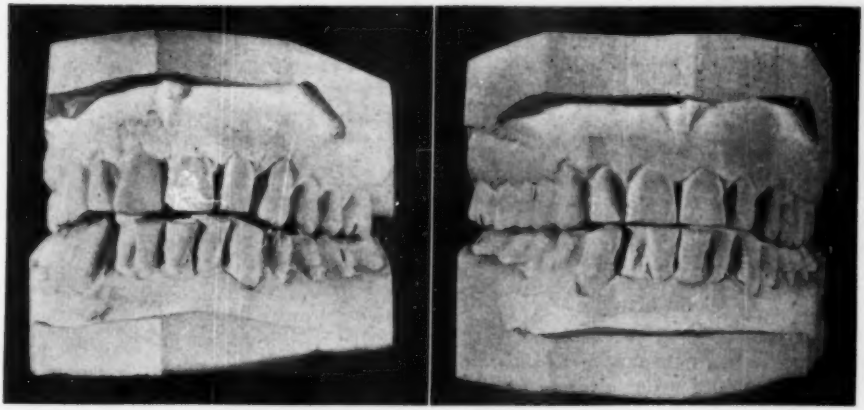


Fig. 11 • A: Before correction of interferences in protrusive excursions. B: After correction

the steep inclines (A) should be reduced to the lesser inclines (B). This reduction must be made along the lines of (B) from the red centric mark to the termination of the blue mark. The red centric mark should not be destroyed.

If interference is felt on the balancing side of the mouth, it may be located and reduced by using the red and blue technic until the balancing side and the working side of the mouth are synchronized. The left side of the mouth may now be studied and corrected in the same manner as prescribed for the right side.

Protrusive Interferences • Figure 11A illustrates the interferences encountered in protrusive excursions. The traumatic effects of these interferences are in evidence on the teeth and the soft tissues. Figure 11B illustrates the improved esthetic and functional conditions that exist when these interferences have been eliminated. In correcting interferences in protrusive excursion (Fig. 12) the red and blue technic should be used. The steep incline (A) should be reduced to incline (B). This reduction must be made on the upper anterior teeth from the red centric mark to the termination of the blue mark until the interferences have been eliminated. The lower anterior teeth should not be reduced to incline (C) in order to allow them to clear the upper anterior teeth. If such grinding were done

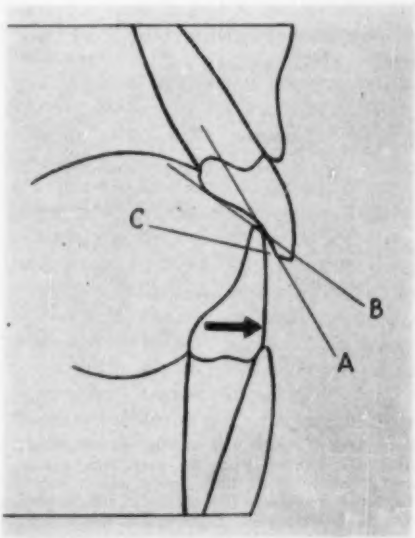


Fig. 12 • Method of correcting interferences on incisors in protrusive excursion

Fig. 13 • Beneficial results of occlusal adjustment. Roentgenograms taken approximately one year apart. Note beginning of regeneration of bony matrix

the lower teeth would simply extrude and in time return to traumatic position.

PROCEDURE

The following order of procedure is recommended for the correction of the traumatic effects of malocclusion:

1. Correction of primary and all secondary premature contacts.
2. Correction of unilateral deviation contacts.
3. Correction of locked cusp contacts and the development of reciprocal contacts.
4. Correction of right lateral excursive interference and interference on the balancing side.
5. Correction of left lateral excursive interference and interference on the balancing side.
6. Correction of protrusive excursive interference.

The roentgenograms (Fig. 13) show the beneficial results that may be obtained from occlusal adjustment. These roentgenograms, taken one year apart, illustrate that impaired teeth, with the usual symptoms of tenderness, suppuration and bone loss can be made comfortable and that tissue tone can be restored and the bony matrix partially regenerated.

CONCLUSION

Functional interferences should be corrected whenever they are in evidence. They should be corrected before orthodontic patients are dismissed and before any great amount of operative work or extensive restorative and periodontal service is attempted.

152 Alhambra Circle

Anesthesia • Broadly speaking, all anesthetic agents are protoplasmic poisons. The poison in effect is enhanced when an anesthetic agent is given in excess, when it is incorrectly administered, when an agent is given which accentuates the effects of pathologic processes already existing, and when the vital functions of respiration, oxygenation and circulation are not adequately managed. Conversely, these untoward effects in the anesthetized patient may be largely eliminated by choosing the most suitable anesthetic agent and method for a particular patient and administering it correctly and skillfully with due regard to its effects on normal physiologic activity and physiopathologic process. *R. Charles Adams, "Clinical Research in Anesthesiology," Anesthesiology 11:178, March 1950.*

Airbrasive: some fundamentals

Robert B. Black, D.D.S., Corpus Christi, Texas

Airbrasive is essentially a nonmechanical method of treating teeth which employs the use of kinetics for its action.[1] Its principal purposes are those of preparing teeth for restoration and removing stain and calculus from exposed surfaces of their crowns. Its conception and development were stimulated by the fact that conventional methods of preparing teeth for restoration are seriously disturbing to the greater percentage of patients, and possess characteristics which create fear and apprehension in association with dental services.

The purpose of this paper is to discuss the factors which stimulated the development of airbrasive, the principles on which the process is based, its intended purposes, the equipment which makes the technic possible, its indications and limitations, a report on the work done to date, and some fundamentals relative to its use.

FACTORS ASSOCIATED WITH USE OF ROTARY INSTRUMENTS

A careful analysis of the physical phenomena associated with the use of the bur or other modifications of rotary instruments reveals four factors, each of which contributes to the general aversion associated with their use. These are: (1) pressure, or force of application; (2) vibration (bone-conducted noises); (3) heat, and (4) mechanical stimulation.

Pressure • The force with which the instrument is applied to the tooth creates apprehension and is thus conducive to tension for two reasons:

1. The patient, being acutely conscious of this force, becomes fearful lest the instrument slip and injure the adjacent soft tissue.
2. As the cutting action approaches the dentinoenamel junction, the patient anticipates fearfully that the nerve will be penetrated.

Although the operator is reasonably sure that neither of these eventualities will happen, it is often extremely difficult to instil this feeling of confidence into the mind of the patient.

Vibration • The remarks of patients seem to suggest that vibration, which is an inherent quality of all forms of rotary instruments, is often the greatest single source of irritation associated with the mechanical cutting of tooth structure. Although vibration cannot be considered a cause of pain and probably is not harmful to the dental pulp, it very often is extremely disturbing to the patient. The vibrations set up by the rotary instrument are interpreted as noise through bone conduction. There are many who claim

1. Black, R. B., Technic for nonmechanical preparation of cavities and prophylaxis. J.A.D.A. 32:955 (Aug.) 1945.

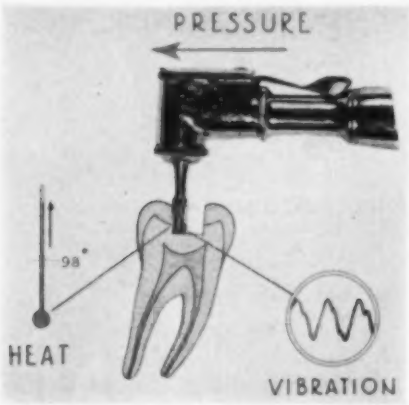


Fig. 1 • Physical phenomena associated with the use of the bur

this factor to be more unpleasant than any actual pain that may occur during the operation.

Heat • Heat is the inevitable by-product of friction, and it is intrinsically associated with the use of all forms of rotary instruments. Heat is not only a principal cause of pain, but it always presents a potential danger to the dental pulp. This factor has long been recognized by the profession as most undesirable, even dangerous, and many attempts have been made to control it. It is a disturbing fact that the dentist, making a conscientious attempt to restore a tooth to useful function, occasionally nullifies his efforts by inadvertently overheating the dental tissues by excessive grinding thereby causing the death of the pulp and the eventual loss of the tooth.

Mechanical Stimulation • The blades of the bur or the crystalline irregularities of rotary stones or diamonds are capable of creating various degrees of pain during the operation by direct stimulation of the fibers in the dentinal tubules. This source of pulpal stimulation is entirely independent of that caused by heat, as is indicated when pain is experienced as a result of pressing a sharp explorer tine or other object against sensitive dentin. The pain caused by mechanical stimulation is doubtless secondary in intensity to that caused by heat.

Significant as these factors may be in relation to the attitude of the patient toward dentistry, of almost equal importance are other factors associated with the use of mechanical handpieces in their effect on the dentist. For example, the force necessary to apply the bur is often extremely tiring and conducive to tension. Together with this tension is the constant tendency of the bur to creep, crawl, or jump, making finger bracing absolutely essential, and further contributing to the drain on the operator's energy. Cutting tooth structure from certain angles and under certain conditions frequently lends to handpiece chatter, which is not only unpleasant and nerve wracking to the patient and dentist, but may be damaging because of its traumatic action on the surrounding investing tissues of the tooth (Fig. 1).

AIRBRASIVE METHOD OF CUTTING TOOTH STRUCTURE

It had long been strongly felt that some basically different method must exist which would make it possible and practical to prepare teeth for restoration without subjecting both the patient and the dentist to the tension which ordinarily is associated with the use of rotary instruments. It seemed probable that once this method was developed people who are prone to neglect their teeth because of fear would tend to accept dentistry's services with the result that more teeth would be preserved for useful function.

It was recognized that in order to be successful, such a method would have to be subject to precise control in order to conform the cutting action to accepted

and proved principles of tooth preparation. It was further recognized that in order for such a method to be successful it would have to be capable of accomplishing the cutting of tooth structure rapidly and with substantial freedom from the unpleasant characteristics commonly associated with the use of rotary instruments.

Since the early use of airbrasive as a method of preparation of teeth for restoration, over two thousand cases have been completed with substantial elimination of rotary instruments. These cases include 82 preparations for cast gold inlays, 1,398 for amalgams, 401 for silicate fillings, 47 for jacket crowns and 183 prophylaxes. Experience has consistently indicated that:

1. Cavities may be prepared in a manner which fulfils the basic requirements for successful tooth restoration with little or no use of rotary instruments. Cavity preparations completed by means of airbrasive and finished with hand instruments do not differ in any essential respect from those prepared by means of burs and stones.
2. This method of preparing teeth for restoration does not stimulate fear and apprehension.
3. Patients accept this type of service who otherwise would neglect and eventually lose their teeth.

The cutting of tooth structure is accomplished rapidly and with complete freedom from vibration. The pressure exerted against the tooth during the operation is so slight as to be unnoticed by the patient. Actually, it amounts to about 10 Gm., or approximately one third of an ounce as compared with the substantial force of 2 pounds or more ordinarily exerted during the use of the bur. The heat problem is practically nonexistent during the cutting action in comparison with the very substantial thermal gain accompanying the use of all rotary instruments. The cutting action of airbrasive may be accomplished with a thermal variable of but one or two degrees when cutting enamel. No noises associated with the operation are conducted by bone (Fig. 2).

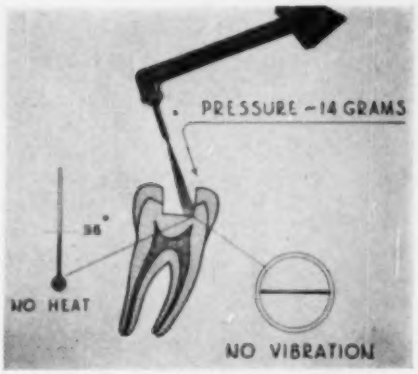


Fig. 2 • Physical phenomena associated with the use of airbrasive

In cases where the tooth is hypersensitive or hyperemic, pulpal stimulation may be experienced in various degrees. Generally, the stimulation may be controlled by reducing the pressure of the propellant, or by reducing the amount of abrasive mixed with the propellant, or both. Even in cases where pulpal stimulation or actual pain has been experienced, the patient usually is quite emphatic in his preference for the nonmechanical over the mechanical method of tooth preparation because of the absence of vibration, and apprehension resulting from force being exerted against the tooth.

It must not be deducted that airbrasive will ever replace the use of rotary instruments. Airbrasive does not entirely duplicate the functions of the bur or stone, and conditions occasionally are encountered where the use of rotary instruments is desirable. It is not considered practical, for example, to bevel enamel margins with airbrasive. It is incapable of removing soft carious den-

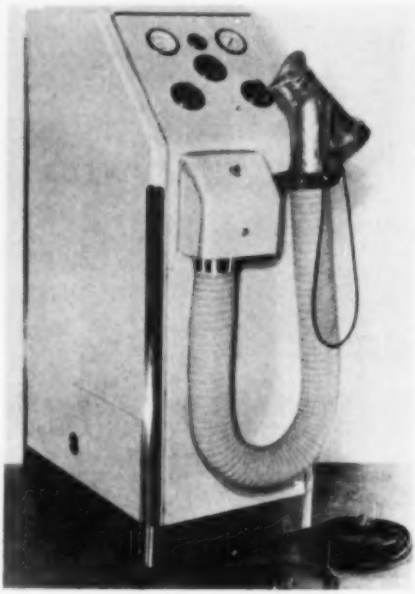


Fig. 3 • Airdent unit

tin. It also is incapable of polishing the surfaces of metal or silicate fillings.

Experience has demonstrated, however, that airbrasive is an invaluable supplementary instrument for accomplishing most of the difficult cutting of hard tooth structure involved in the preparation of teeth for fillings and jacket crowns, and also for removing heavy deposits, stubborn stains and calculus from the exposed surfaces of tooth crowns.

In the successful application of kinetics as a method of performing dental operations it is imperative that the operator be thoroughly familiar with the characteristics of the instrument and the fundamentals governing the proper utilization of its action. As the principles on which airbrasive is based and the method for its use are so radically different from those of rotary instruments, it is essential that a course of instruction and training be provided the operator before the equipment is made available. During the past year many of the dental colleges throughout the country have cooperated in preparing adequate courses of airbrasive instruction and training.

THE AIRDENT UNIT

Airdent equipment, like its mechanical counterpart, consists essentially of a unit (Fig. 3), foot control, and handpiece.

The unit provides a source of suitable gaseous propellant, a means of regulating its pressure, reservoirs for storing the abrasives, and a means of accurately metering the amount of abrasive which is mixed into the propellant. It further provides for a means of selecting whichever type of abrasive is desired, depending on the type of operation to be performed. Gages are necessary for revealing to the operator the exact propellent pressure and abrasive mixture used. In order to recover tooth debris and spent abrasive from the area of operation, the unit contains a suction hood, a source

Fig. 4 • Detail of airbrasive handpiece showing pattern of the abrasive stream

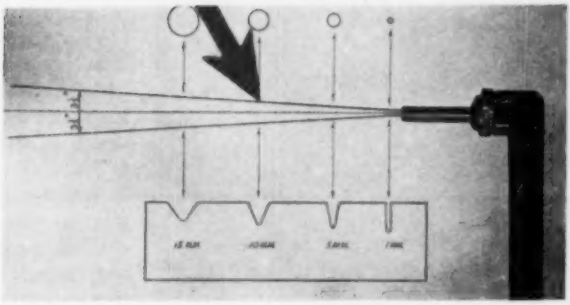


Fig. 5 • Angle of divergence of abrasive cutting stream. In block below is shown the type of cut obtained in using corresponding section of the cutting stream indicated by arrow. Arrow points to 10 mm. (nozzle tip distance) section of the stream

of vacuum, a means of separating the tooth debris and abrasive particles from the air, and a place for storing this waste material until it can be removed for disposal.

The foot control, in contrast to that employed with the conventional unit, is a simple on and off push switch operated by the foot. It activates an electric valve which instantly starts or stops the flow of the abrasive to the handpiece.

The handpiece consists essentially of a handle, an adjustable contra-angle and a small nozzle. The nozzle, constructed of sintered tungsten carbide, is approximately ⅜ inch in length and has an inside diameter of 0.018 inch. With ordinary use, the nozzle should last several months before having to be replaced.

BASIC PRINCIPLES OF AIRBRASIVE

Airbrasive depends for its action on a fine stream of suitable gas carrying a controlled quantity of small abrasive particles (Fig. 4). When used for cutting tooth structure, a hard abrasive having an average particle size of 30 microns is employed. Any portion of the tooth against which this stream is directed is cut away rapidly. When used for prophylaxis a soft powder is substituted for the hard abrasive, and any stain or calculus against which the stream is directed is removed rapidly. Although compressed air may be and has been used as a propellant, carbon dioxide was found to possess certain advantages for this purpose. It is practically free from moisture, nontoxic in low concentrations, inexpensive, convenient and almost universally available.

The abrasive employed for cutting tooth structure is aluminum oxide. It possesses a hardness of 9 on Mohs' scale and its particles possess sharp edges and pointed corners when properly prepared. It is stable, nontoxic and relatively inexpensive.

The pressure employed for the propellant may vary from 30 to 80 pounds per

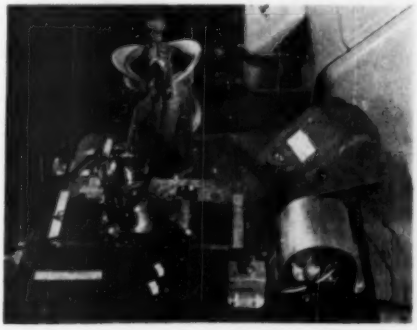


Fig. 6 • Precision machine constructed for making carefully controlled cuts in blocks of different materials. These cuts, when completed, were sectioned in order to study relation between nozzle tip distance and nozzle angulation

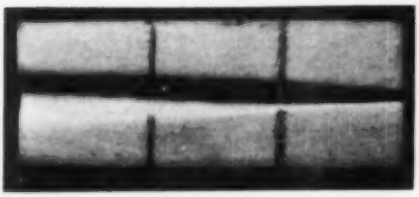


Fig. 7 • Variable distance cut made in controlled-cut machine, nozzle tip distance of 1 mm. at right extremity, and 15 mm. at the other extremity

square inch behind the nozzle, depending on the character of the work being accomplished.

Character of the Abrasive Stream • The abrasive escapes from the nozzle in a cone-shaped stream, the walls of which diverge from its long axis at an angle of approximately 3½ degrees (Fig. 5). The particles of abrasive in the stream travel at speeds in excess of 1,000 feet per second, which is well into the realm of supersonics.

In utilizing the stream of rapidly moving abrasive particles to establish outline form and to determine the pitch of cavity walls it is important that the operator first thoroughly understand the relation which exists between the distance at which the nozzle tip is held from the tooth surface and the angulation of the nozzle with respect to the proposed cavity wall. As an aid in establishing the principles of this relation a machine was constructed for establishing controlled cuts in blocks of solid material (Fig. 6). In a block of compact bone approximately 1 inch in length a cut is started at one end, employing a nozzle tip distance of 1 mm. and an angulation of 90 degrees. A small electrically drawn carriage to which the handpiece is attached then draws the handpiece the entire length of the block of bone at a uniform rate of speed. The distance of the nozzle tip from the bone surface increases to a maximum of 15 mm. when the other end of the bone block is reached (Fig. 7). The bone block is then sectioned in order to determine the angulation of the long axis of the nozzle relative to the walls of the cut (Fig. 8). It will be noted that with a nozzle tip distance of 1 mm. the angulation is zero. The long axis of the nozzle is parallel to the desired pitch of the cavity wall. At 5 mm. nozzle tip distance, nozzle angulation is approximately 13 degrees, at 10 mm. it is approximately 23 degrees, and at 15 mm. it is approximately 35 degrees. These figures must be considered as approximations and should be used only as a guide because they are materially influenced by the variables of time and the depth of the cut. Although it is important that the operator be familar with the theory underlying the relation between nozzle tip distance and nozzle angulation, in the final analysis the ability to manipulate the handpiece effectively is established only after considerable effort and practice (Fig. 9). To acquire any skill, a certain amount of patience is needed, but once acquired, it will be found that airbrasive requires considerably less effort to operate and is much less conducive to tension than the mechanical handpiece.

Cutting Speed • Any method employed for the preparation of teeth for restora-

Fig. 8 • Cross sections through three different planes of variable distance cut. Cross section at the right shows typical straight line cut. The other two cross sections show angle cuts made with nozzle tip distances of 7.5 mm. and 15 mm. respectively

tion must be capable of removing tooth structure at a rate compatible with the requirements of efficiency and economy. Carefully conducted experiments have indicated that the cutting speed of rotary instruments may vary between wide limits (Fig. 10). Influencing factors are the nature of the instrument—bur, stone, or diamond—its diameter, speed in rpm at which it is used, and pressure with which it is applied. An ordinary no. 561 chrome plated dental bur is capable of removing approximately 6 mg. of enamel in 30 seconds at 1,725 rpm when applied with the pressure of 2 pounds. A ⅜ inch green grit stone at 1,725 rpm applied with a pressure of 1.75 pounds is capable of removing approximately 15 mg. of enamel in 30 seconds and a ¾ inch diamond disk at 6,000 rpm applied with a pressure of 3 ounces is capable of removing 27 mg. of enamel from a tooth in 30 seconds.

Conversely, the cutting action of airbrasive is influenced by such factors as propellent pressure, type and particle size of the abrasive used, abrasive mixture, nozzle bore and length, nozzle distance from the enamel surface, and nozzle angulation. Using aluminum oxide with a propellent pressure of 80 pounds per square inch, a nozzle of 0.018 inch inside diameter, and nozzle tip distance of from 7 to 13 mm. with an angle of 90 degrees, airbrasive is capable of removing 30 mg. of enamel in 30 seconds, or 1 mg. per second.

Handpiece Reaction • The reaction force of the mechanical handpiece is substantial and irregular because of vibration and the ever present tendency of the handpiece to creep or jump. The reaction force of the airbrasive handpiece is constant and of low magnitude regardless of the nature of the substance being cut, or the angle of its surface. Thus it is never necessary to employ finger bracing during its use. The fingers are employed solely for steady rests.

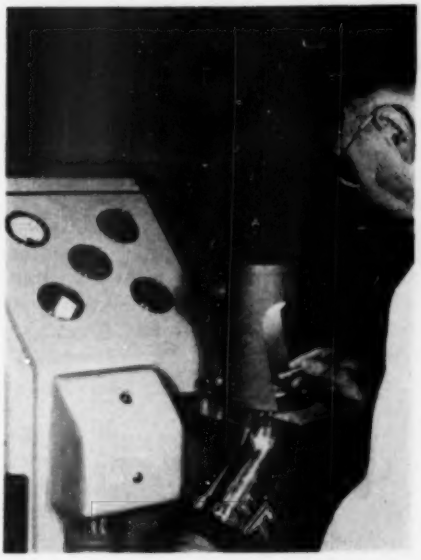


Fig. 9 • Using the Airdent practice fixture on extracted teeth

Handpiece Control • The importance of practice and experience in the use of the airbrasive handpiece cannot be overemphasized. The operator must develop close coordination between the eye, hand and foot. Because there is no tactile relation between the instrument and tooth being operated on, the operator must rely almost solely on his visual sense. Good eyesight and good lighting are imperative.

Basic Types of Cuts • Regardless of the type, size or location of the cavity being prepared, the principles involved for the establishment of cavity walls and floor do not vary. Once these principles are understood by the operator, he should be able to apply them anywhere. There are two basic types of cuts which may be employed with the airbrasive handpiece for the establishment of outline form and cavity walls. These are: (1) the straight line cut and (2) the angle cut. Both of

these cuts have advantages and are valuable when utilized in the proper place.

Straight line cut • The straight line cut is employed where a high degree of definition is desired. This type of cut utilizes close nozzle distances and is precise and narrow. Its cross section greatly resembles that which would be produced by the edge of a diamond or carborundum disk (Fig. 11). The straight line cut usually is employed where the angle of the wall must be controlled closely, as for a gold inlay. It also is used for isolation and removal of proximal walls for Class II restorations.

Angle cut • The angle cut employs the use of greater nozzle distance, together with the required nozzle angulation. As the nozzle distance from the substance being cut increases, the angle of the walls increases proportionately (Fig. 12). In establishing a wall of a given angle, the nozzle angle relative to the cavity wall must be increased proportionately as greater nozzle distances are employed. The advantages afforded by the employment of the angle cut are: (1) greater cutting speed and (2) less visual interference.

Angle cuts are indicated principally for the preparation of Class I cavities for amalgam fillings and for occlusal dovetails for Class II amalgam fillings.

CONCLUSIONS

Airbrasive provides a method of establishing conventional tooth preparations which is largely free of the unpleasant

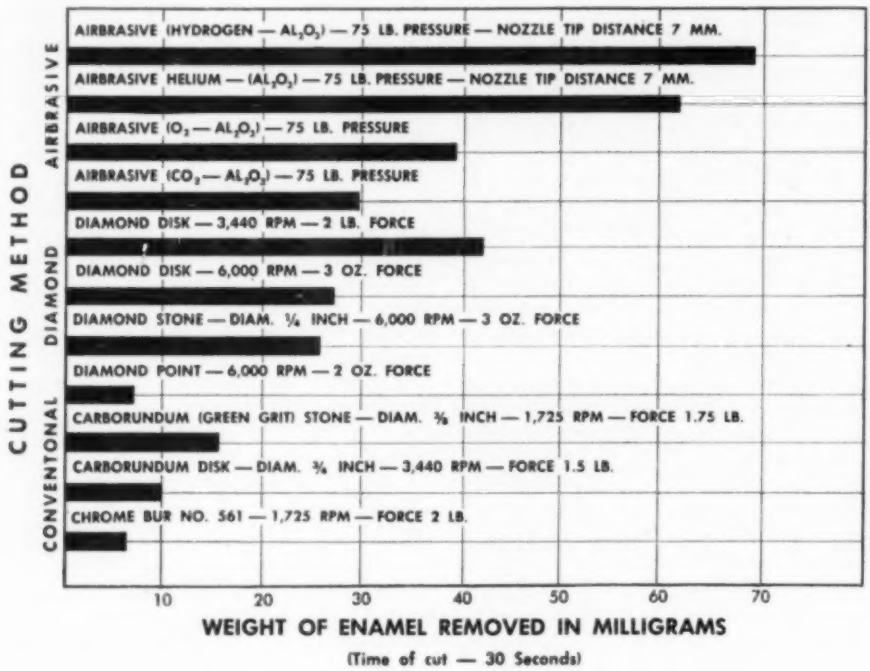

CUTTING METHOD
AIRBRASIVE
DIAMOND
CONVENTIONAL
AIRBRASIVE (HYDROGEN — AL_2O_3) — 75 LB. PRESSURE — NOZZLE TIP DISTANCE 7 MM.
AIRBRASIVE HELIUM — (AL_2O_3) — 75 LB. PRESSURE — NOZZLE TIP DISTANCE 7 MM.
AIRBRASIVE (O_2 — AL_2O_3) — 75 LB. PRESSURE
AIRBRASIVE (CO_2 — AL_2O_3) — 75 LB. PRESSURE
DIAMOND DISK — 3,440 RPM — 2 LB. FORCE
DIAMOND DISK — 6,000 RPM — 3 OZ. FORCE
DIAMOND STONE — DIAM. ¼ INCH — 6,000 RPM — 3 OZ. FORCE
DIAMOND POINT — 6,000 RPM — 2 OZ. FORCE
CARBORUNDUM (GREEN GRIT) STONE — DIAM. ⅜ INCH — 1,725 RPM — FORCE 1.75 LB.
CARBORUNDUM DISK — DIAM. ¾ INCH — 3,440 RPM — FORCE 1.5 LB.
CHROME BUR NO. 561 — 1,725 RPM — FORCE 2 LB.
10
20
30
40
50
60
70
WEIGHT OF ENAMEL REMOVED IN MILLIGRAMS
(Time of cut — 30 Seconds)

Fig. 10 • Cutting speeds of various dental instruments

characteristics associated with the use of the bur. Its concept and development were stimulated chiefly by the almost universal public aversion to the use of rotary instruments. Airbrasive is not capable of

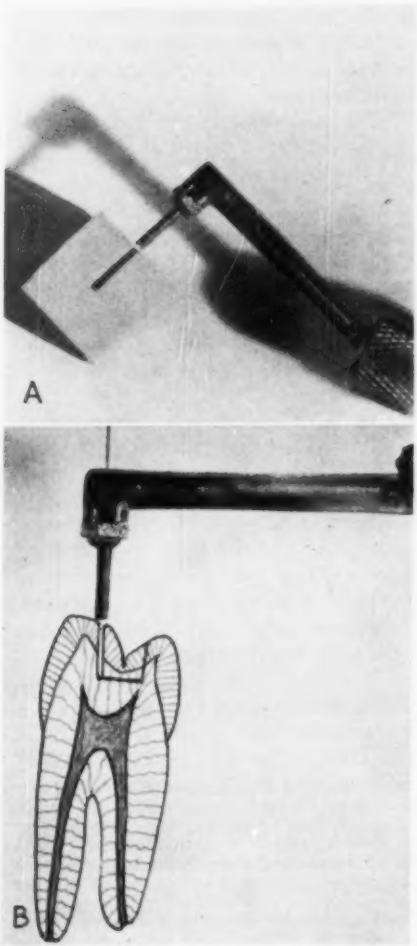


Fig. 11 • Typical straight line cut. Above: Nozzle tip distance of 1 mm. and nozzle long axis parallel to walls of the cut. Below: Walls of cut are parallel to long axis of the nozzle. Nozzle tip distance is about 1 mm.

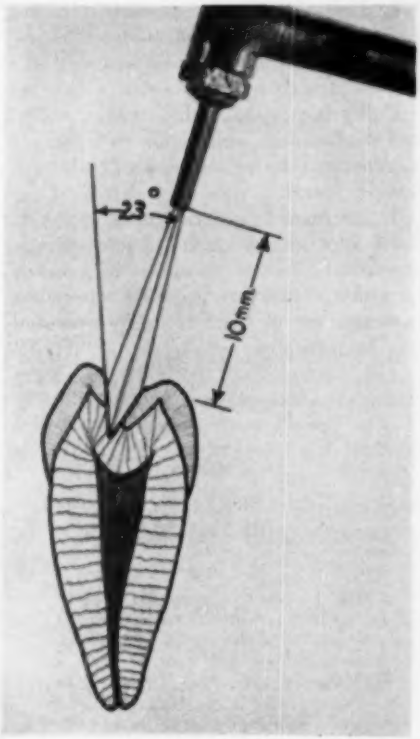


Fig. 12 • Angle cut being employed to establish buccal wall. Approximate figures relative to nozzle tip distance and nozzle angulation are indicated

duplicating all of the functions of rotary instruments. Its principal value lies in the fact that it cuts hard tooth structure easily and accurately. It is incapable of removing soft carious dentin or beveling cavity margins. It is incapable of polishing metal or silicate fillings. Once skill in its use is acquired, the various cavity preparations may be made rapidly and in conformity with accepted requirements. Such preparations require but little finishing with hand instruments. The general procedure is to:

1. Place the rubber dam.

2. Use airbrasive for general establishment of the tooth preparation. This includes establishing outline form, extending margins to immune areas, following out all grooves, establishing cavity walls, and conforming preparation to basic requirements relative to resistance and retention forms.

3. Finish the preparation by means of hand instruments. Soft carious dentin should be removed by means of a spoon excavator. There are instances where the judicious use of the bur or rotary stone may be indicated.

The two general methods for establishing outline form and cavity walls are: (1) the straight line type of cut and (2) the angle cut.

Types of cavity preparations for which airbrasive is indicated are:

1. Class I and Class II preparations for amalgam fillings, inlays and gold foil.

2. Class III preparations for lingual dovetail inlays, and Class III preparations for silicate and plastic fillings.

3. Class V preparations for gold foil, amalgam fillings, silicate fillings and plastic restorations.

4. Three-quarter crown preparations.

5. Jacket crown preparations.

6. Prophylaxis.

Positivism • During the mid-Nineteenth Century, as a result of the remarkable development of science which took place in Europe and America, Auguste Comte brought forth the idea that science had sufficiently advanced to explain the so-called facts of human life. This concept became popular and had its reflection in medicine. This doctrine, known as Positivism, has a retarding effect on scientific progress owing to insufficient realization of the limitations of science as well as to an actually deficient knowledge of physical and biological reality, which did not permit adequate interdisciplinary correlation of information, had this been considered of much importance at the time. A critical survey of the medical culture of the past fifty years will demonstrate that much of the medicine of this period must be considered to be still in the positivistic stage of development, with characteristic overevaluation of surgical procedures and dependence on palliative and sedative medications, lack of correlation and integration with other fields of knowledge, and an insufficient realization and a too rigid interpretation of basic philosophical postulates. In general it may be said that the positivistic therapeutic viewpoint is not conducive to the development of true etiological therapies. *Maurice N. Walsh, "Concepts of Therapy," Proceedings of the Staff Meetings of the Mayo Clinic 25:543, September 13, 1950.*

The basic challenge: an editor examines the crisis of our time

Erwin D. Canham, M.A., Litt.D.

The struggle in which we are all so deeply involved and interested—the struggle for the salvation of society in our time—will be lost unless we in the West, and particularly we in the United States, awaken to and project to the world the great fact that we are the true revolutionaries in world history, and that our revolution is basically a spiritual one which we have already proved in action.

It is very necessary that the rest of the world understand the spiritual foundations of America, because hitherto we have permitted most of the world to think that the American achievement in human history is primarily a materialistic achievement. This gap in understanding is the great gulf which yawns between ourselves and those in the world who yearn for much more than materialism. And we are the first victims ourselves of the misunderstanding.

This misunderstanding in other nations, whose people vastly outnumber our own people, is so pervasive in the world today that it would seem to be the key to the future of free society. The truth about this matter was put most eloquently by a man named Malik—not Mr. Jacob Malik, the delegate of the Soviet Union to the United Nations, but Dr. Charles Malik, who is the Minister of Lebanon to the United States and who combines in his own culture a meeting of the cultures of the East and of the West. Dr. Charles Malik said:

> To the superficial observer who is unable to penetrate to the core of love and truth which is still at the heart of the West, there is little to choose between the soulless materialism of the West and the militant materialism of the East.

Dr. Malik went on to make this more explicit. He said, addressing us Americans particularly:

> If your only export in these realms is the silent example of flourishing political institutions and happy human relations, you cannot lead. If your only export is a distant reputation for wealth and prosperity and order, you cannot lead. Nor can you really lead if you send forth to others only expert advice and technical assistance. To be able to lead and save yourself and others, you must above everything else address your mind and soul. Your tradition, rooted in the glorious Graeco-Roman-Hebrew-Christian-Western-European-humane outlook, supplies you with all the necessary presuppositions for leadership. All you have to do is to be the deepest you already are.

That is the challenge which faces our nation and all of us as individuals at this hour. It is not a challenge requiring the stating of new fundamentals. It calls for no panaceas. It would be served by no panaceas. It is a call to awakening and to articulation. The basic need today is to understand and to proclaim the truth

Editor, Christian Science Monitor.

Presented before the general meeting at the ninety-first annual session of the American Dental Association October 31, 1950, in Atlantic City, N. J.

about ourselves and our place in the world. The West—and above all, we in the West—must find its voice.

THE TRUTH ABOUT THE ISSUES CONFRONTING THE WORLD

Let us, therefore, ask ourselves a few fundamental questions. Let us try to state the truth or the nearest to the truth that we can come on the great issues which today confront the world. Mankind today is being told everywhere that he must choose between revolution and reaction. Man is told that Communism represents revolution, and that our system—which is opprobriously called "capitalism"—represents reaction. In such a confrontation there would be no choice. Mankind must go forward. But that statement of the issue is an explicit reversal of the truth.

The fact is that Communism, like totalitarianism in any form, represents the blackest of reactions. The fact is that the free system, of which capitalism is only a particular and modified part, represents the authentic revolution—not a subversive revolution, but a revolution which sets men free.

We in the Western World are the true standard-bearers of a great and emancipating doctrine. We are the people who ought to be singing the rousing songs and waving the banners from the ramparts of the human spirit. Instead, by a tragic reversal, we have allowed ourselves to be thrust into the indefensible position of seeking to protect the status quo. The free system is by no means the same thing as the status quo. Our tradition is not and never has been static, but is constantly dynamic. Our tradition strikes off chains, and has done so demonstrably throughout its history. Totalitarianism would put the chains back on again. That stirring slogan, the battle-cry which ends the Communist Manifesto, which was written a century ago, is itself a delusion. Karl Marx and Engels wrote: "The proletarians have nothing to lose but their chains. They have a world to win." Let us consider that statement for a minute. Where, in today's world, are the people in chains? Is it in the United States that they are, amongst what Karl Marx was pleased to call the proletariat and we would call, perhaps, working people? Is it in the United States that they are—where the most advanced position for organized labor has been achieved in perhaps the history of the world? Or is it in the world's most extensive Communist state, the Soviet Union, where tragic millions of human beings, suffering and dying, today are bearing the literal chains, the very real and very heavy physical chains of slave labor? Is it in Britain that the so-called proletariat is in chains—Britain, where the working people's own government is in authority and has been in authority for five years operating the government? Where are the chains today? Where, above all, are the mental chains? Are they in the free universities and the free churches of the Western World? Or are they in the Communist states, where man's right to think is now denied on behalf of the omnipotent state, and free science and free religion have ceased to exist?

These are among the facts to which we must awaken.

THE BATTLE OF TRUTH AGAINST FALSEHOOD

But let us come at our task in an orderly way. Let us first ask ourselves, in the most searching possible fashion, what are the chief claims of Communism to the people today, and let us confront these claims with the best truth that our experience as individuals has taught us. Let us, then, examine these two doctrines —Communism and Western Democracy —in their actual practice, to test their words by their works. And finally, let us try to chart a plan of campaign in this great battle of truth against falsehood.

THE BANKRUPTCY OF MATERIALISM

The primary claim of Communism, the foundation stone on which it rests, is what is technically called dialectical materialism. Those empty words simply mean the assertion that ultimate reality lies in materialism, in matter, in our material experience alone. But the truth as we know it is that superior to materialism in every way is the reality of mind and of spirit. In our own time an awakening to the metaphysical bankruptcy of materialism is beginning to sweep over thoughtful mankind. I believe this awakening is most striking among the natural scientists, among the physicists, astronomers, mathematicians, and others, because these scientists are finding, in the realm of the very little and of the very large, of the infinitesimal and of the infinite, that old materialistic assumptions of the 19th century are no longer valid to explain the observable data of today. Reality is now by these scientists recognized to be related to consciousness. Time and space are seen to be dependent upon consciousness. Reality is emerging more and more to today's thinker as the basic essence which lies behind and beneath the material manifestation.

But there is an even more striking and even more topical proof of the bankruptcy of materialism. Men in our time have wrought the most powerful engines in their experience: from gunpowder and steam and electricity they have progressed to atomic power. And yet they now see that the power to help or harm mankind lies not in the atom itself, not in the uranium or plutonium or tritonium, but in the thinking that motivates the finger which does or does not push the button that does or does not set off one of these atomic explosions.

In the words of Dr. Edmund W. Sinnott, great Yale scientist and the dean of Sheffield Scientific School, "Man, not matter, is the chief problem of mankind today." And that statement from a great natural scientist pretty well summarizes the answer of a free world to Communism on the point of the first tenet of Communism; namely, dialectical materialism.

The second great lie of Communism walks hand in hand with the first. It is the assertion that there is no God. Today we have the opportunity of knowing, and we have had in recent days of peril the opportunity of knowing more vividly than ever before, that there is indeed a God, who is the loving Father of all mankind. We in our time do not necessarily have to identify this basic, Divine Providence with a single three-letter word. Possibly it is useful in some respects to think of God as defined in the terms which the natural scientists are bringing to us, as the central principle of the universe. Perhaps it helps to think of this divine power as eternal truth and life and love, as we are told in the Scripture. These things cannot be denied. We have long since learned that the universe is orderly. We know that it works according to established rules and principles, some of which we have been able partially to define. It seems to me to be rationally impossible to admit the reality of an orderly universe on the one hand and to deny God on the other.

THE TRANSCENDENCE OF TRUTH

Still further to disprove Communist dialectic, take the assertions in Marx's doctrine that there is no objective and eternal truth, and that only the transient and the temporal exist. I am sure that we in the Western World can readily prove to our satisfaction that there is truth, and that it is transcendent. Again, if we wish, we can prove it in the working of the laws of the universe. Or we can prove it in the vast and noble reaches of the mind and of the heart. There is abundant evidence in our experience of the existence of permanent values. These are accessible to mankind through a humble search for understanding. They come

through the path of reason as well as down the road of revelation. They lift humankind out of its own confusions and perversities into the land of eternal truth. They are to be confirmed not only in the religious convictions and teaching of mankind but in the positive philosophical traditions of Plato and Aristotle, of Hegel and Whitehead.

THE PLACE OF THE STATE AND OF THE INDIVIDUAL

Finally we come to another great Communist falsehood: that the individual exists for the sake of society and the state. This lie follows logically from the assertion of materialism and from the denial of eternal truth and order. But this is the specific doctrine which seeks to enslave mankind. And yet the truth as we know it, as we have proved it in our experience daily, is that the state and society must exist for the sake of the individual. It is this Communist falsehood which would stifle the spirit of man. This is the essence of totalitarianism. But this theory is contrary to nature and to man.

Let me quote the eloquent words of Dr. Malik of Lebanon once more. He said:

> That the state, the mere organ of government and order, is the source of every law, every truth, every norm of conduct, every social and economic relationship; that no science, no music, no economic activity, no philosophy, no art, no theology, is to be permitted except if it is state-licensed and state-controlled; all this is so false, so arrogant, so autocratic and tyrannical that no man who has drunk deep from the living waters of the Western-Platonic-Christian tradition can possibly accept it. The state does not come in first place; it comes in tenth or fifteenth place. The university is higher than the state; the tradition of free inquiry is higher than the state; the church is higher than the state; the family is higher than the state; natural law is higher than the state; God is higher than the state; within limits, free economic activity is higher than the state.

It is good that Dr. Malik, who blends in his own culture the best of East and West, should have recognized not only the spiritual importance of church and university and family, but of free economic activity as well. For this brings us to the crux, perhaps, of the world's problem today. It is the free economic activity of the West which is most under fire in the contemporary world. It is this free economic activity which is used by those who hate or misunderstand it to brand the West with the stigma and the curse of materialism. The need, therefore, is for an awakening to the spiritual obligation and heritage of the free economic system.

COMMUNISM AND THE FREE ECONOMIC SYSTEM EXAMINED

Let us, then, proceed to the second of our main points: an examination of Communism and the free economic system as they reveal themselves in action.

It is not necessary, first of all, to belittle the actual achievements of the Soviet State. Historic objectivity requires us to recall the importance of the transition in the last quarter of a century and more from czardom, the achievement of partial industrialization in the Soviet Union in the face of two wars. In a certain very narrow framework, the Soviet State has accepted a large obligation to the individuals who make it up. It has gone a considerable distance toward harmonizing the diverse interests of widely separated and scattered racial and cultural groups. In World War II the Red Army under Joseph Stalin helped greatly in resisting and defeating a powerful aggressor.

It is important to recognize, also, that we have to live with the Russians, and many of the things we find dangerous in the present Soviet State are traits and trends which long antedate Communism. We must find ways of adjusting ourselves to life with an awakened Eurasian conti-

nent, that vast combination of peoples stretching across two continents. Perhaps it is a blessing for mankind that the awakening and the industrialization of this vast area have come about under a system which inevitably handicaps and limits its potential achievement. Sometimes one is appalled at the aggressive possibilities of a Russian Empire organized with the efficiency and the power of industrialized Britain in the 19th century, or the United States in the 20th century. A great natural scientist, Dr. Merle Tuve—the man who discovered the proximity fuse in World War II—recently remarked that the greatest single discovery of World War II was the efficiency of the free system. Sometimes we forget that, as the free system seems to be relatively inefficient as it gets going, but in the end the efficiency of the free system most definitely pays off. That kind of efficiency coupled with the natural resources and the immense racial dynamism of the people who are now under the hammer and sickle would make a world force of incalculable potential.

Communism has partly liberated and partly stifled this great capacity. On balance, at this point of the mid-century, there is far more stifling than there is of liberation. When, as I believe to be inevitable, the Russian peoples are finally and genuinely liberated, we must be ready with a universal system of peace and order. Otherwise, they will be an explosive force against which today's Communism will be a pallid squib.

THE STERILITY OF COMMUNISM

Fortunately, there is also in the Russian people a great and magnificent spiritual and universal yearning. The free Russian soul, in all its exuberance, longs for human brotherhood and bears a heavy burden of anguish for the spiritual failure of humankind. These deep impulses have helped to support Communism. They would be far more effective in support of a free system wrought for the benefit of all mankind. The Russian need for religion has partially and temporarily accepted Communism as a kind of religion. When the Russian spirit is ultimately freed, it must find its way fully into the spiritual pastures of the great western tradition of truth and love. Otherwise, Russia might remain the world's great challenge for long and turbulent years—far more dangerous than in our own time, when Russia is self-curbed by a hopelessly inefficient and inhibiting system. But even under the present limitations it is unnecessary to add that the Russian achievement in our time has been very considerable.

On balance, however, the Soviet system remains one of chains and of slavery. It remains reaction, of the pattern of all the tyrannies that have sought to bind the free spirit of man and to withhold his natural rights down through the millennia. The fact is that Communism in all its works is both spiritually and materially sterile. It is fundamentally a failure, because it is unable to utilize more than the merest fraction of the forces which are available. It is the most profligate destroyer of human resources. Its concentration camps and its mass graves are filled with the richest of human talent. Those who survive are denied the immense productive force of free inquiry, of objective experiment, and of full self-analysis.

ACHIEVEMENTS OF WESTERN FREE ECONOMIC SYSTEM

Against all this, contrast the thing with which we are all most familiar—the actual achievement of the free system of the West. The American economy, derided and attacked by its enemies, is today holding the line against world collapse. With all the faults which we know full well lie within our society and in its economic organization, the fact remains that the world today would be in chaos

without the stability and productivity of the United States.

I am not here seeking to put a halo around the profit motive; far from it. The first and the most important thing to say about the free economic system is that it can survive only to the degree that the individuals and combinations that make it up accept their social obligation.

Moreover, there is a very considerable difference between much of the economic organization which passes by the name of capitalism in some parts of the world and the best of the free economic system which enlightened leadership has brought into being in the United States and elsewhere. In many places, when we are forced into the position of defending capitalism, we defend a feudal or a cartellist concept which would appall the thoughtful American business enterpriser.

The free economic system in the United States, and measurably in various other parts of the world—including, particularly, the smaller states where either neutrality or cooperation, or both neutrality and cooperation, have supported much real equality and high standards of living—can be objectively left to stand or fall on its own merits. It stands. It stands because it has given more opportunity to the individual than any other system ever tried. It stands because it is perfectible. It is not dogmatic—or it should not be. It should always recognize the imperatives of self-criticism and of change. It should remember the paramountcy of human values on the one hand, but that these human values are not the values of social security alone.

SOCIAL OBLIGATION IN A FREE SOCIETY

There are serious shortcomings in the idea of security, taken as an ultimate value. No society which would enshrine security as an end in itself was able long to continue the march of progress. Dissatisfaction, adversity, risk—these are the imperatives of progress. Furthermore, to enshrine security as an end in itself, and to place its procurement and its maintenance in the hands of the state, is to say that the state is above the individual. That is the road of slavery, of social suicide. We must keep the individual and the individual-based forms of organization as our primary values: man and church and school, along with family and free economic activity. The state owes nobody a living. At the same time, it is necessary and effective to organize through the state the many functions which the individual or private organizations cannot accomplish. It goes without saying that insurance barriers against the hazards of the economic system—old age or unemployment—are accepted and legitimate parts of public responsibility. That form of social security can be kept in its proper place.

But the increasing sense of the dependency of the individual upon the state is not merely the counterpart of the need for recognition of social obligation. It is, however, often the result of the failure of free enterprise to recognize that social obligation. In an industrial society, dominated by mass production, the individual is peculiarly insecure. He will seek the means of survival through collective action. For the laborer, the working man, protection comes through unions and to some degree through government. Sometimes it comes through a cooperative relationship with his employer; and that, of course, is best of all. For the employer, protection also comes through his own kind of collective action, sometimes through a trade association, sometimes through government. But we have made great progress in the Western World in evolving forms which are consistent both with free enterprise and with the special hazards of an industrial society. And again I must emphasize that these forms work best when they are founded upon a voluntary and perceptive acceptance of social obligation. That is the final and indispensable bulwark of the free system.

SPIRITUAL AND MATERIAL REWARDS OF FREEDOM

The fruits of this system are expressed both in material and in spiritual terms. Altogether too often we have remembered only the material rewards. We boast of our standard of living, and when we go abroad the dollars clink in our pockets. We are sometimes obsessed with material gain and with unrestrained selfishness. We have been our own worst salesmen, for we have convinced most of the rest of the world that we are money-mad materialists. Nevertheless, the greatest fruitage of the free system is spiritual. It lies in the recognition of the essential dignity of man which is implicit in equality of opportunity. It lies in the concept of legitimate service.

Possibly you will understand me when I say, not too whimsically, that the American filling station is a very good illustration of the triumph of the free system. It is not the mechanical excellence of the filling station which is its chief virtue. It is its spirit. There is a spirit of enthusiasm and self-respect which typically infuses the filling station and has made it really one of the most successful of our various institutions. I do not altogether know why this is so. I merely point out that our free economic system at its best has gone a very long way toward the enshrining of human values, and the attainment of a genuinely democratic relationship between server and served. I do not think anyone will deny that this is a spiritual value.

Awareness of the individual importance of man thus stands out as our greatest achievement. It lies at the heart of the matter. Recognizing the significance of individual man, we have been able to mobilize and to utilize the vast and still uncounted resources of the human spirit. This is an accomplishment of revolutionary importance. It springs from the circumstances under which Europeans first came to the New World; it is based upon the political and theological roots of our society. It is genuine democracy. Established in the midst of the natural resources of a continent, it has enabled us to become a material and spiritual bastion for the safeguarding of western civilization. We have been able to achieve the adequate blending of natural and of human resources, and while we often have wasted natural resources in profligate manner, we have come to utilize human resources within enterprising but humane bounds. This is illustrated by our rejection of child labor on the one hand and our increasingly wide opportunities for women to make a more adequate contribution on the other. But I would not gild the lily. There are plenty of dark spots in our human experience as we have moved toward fuller light. There are dark spots today. They are part of the challenge, part of the incentive, part of the unfinished business without which we would decline and perish.

THE OBLIGATION TO AWAKEN AND TO PROCLAIM

And that brings us to our third point: a plan of campaign in the war of ideas. The first necessity for all of us is manifestly self-awakening. We must re-discover the ideas by which we live. The ideology of Communism is well known and it is widely proclaimed. It is passionately believed by many of those who proclaim it. This awareness or this intensity is integrated and guided. There is no comparable intensity or coordination of ideas among those who believe in the free system. There will not be until we look at our heritage in fundamental terms and arouse ourselves to its full meaning. The obligation of every citizen, of every leader, is to awaken himself and to awaken his fellow man to the significance of today's challenge.

The second necessity, after the awakening, is the voice. Already there are various

small voices from the free nations—voices seeking to penetrate the void of human thinking. They must rise to full articulation. We possess today mighty machines for disseminating ideas to every corner of the globe. But we have not yet learned what it is we have to say. In fact, the message we must express is the same old message of truth down the ages: the significance of man under God, of man's brotherhood, of man's birthright of freedom.

NECESSITY FOR RESISTANCE AGAINST FALSEHOOD

The third necessity, along with the awakening and the voice, is the fuller demonstration of the free system in action. There is contagion in falsehood. Some of the lies of totalitarianism and materialism have penetrated into our own thinking. We must not let them stay there. In this unhealthy atmosphere of no-peace, no-war we have yielded some citadels to the enemy. In these bewildering times, we have yielded to distrust of human character and the cloud of suspicion, often of slander, hangs over the human spirit. We must learn again to understand and to trust character, because free institutions depend upon respect for fellow man. We must spurn the corrosive doubts which sometimes do far more harm to our body politic than the dangers to which they pertain. We must, as I have said earlier, manifest social responsibility throughout our economic system. We must make swifter progress toward the removal of racial and religious barriers which prevent true community. These are but a few of our items of unfinished business, a few of our ways of proving in action the truth by which alone we live.

And finally, let us regain perspective, let us cast off the inferiority complex with which Communism has bemused us, let us reaffirm a consciousness of our birthright.

We stand in human history as the greatest revolutionaries of all time. Not just we Americans, but all of us in the Western World.

We are the guardians of a sacred and dynamic heritage. We have come a very long way. We have a long way still to go.

We have discovered long since the eternal truth of love and peace and brotherhood. We learned it at our mothers' knees. We have discovered and in a measure applied the enormous potency of the free man.

We have lifted part way the heavy burden of toil that has crushed humanity down through the years. We have not lifted it too much, because mankind without hard work would decline, but we have lifted some of the cruel burden of work from dawn to dusk, and of women and children slaving in mines and factories. Even more gloriously than lifting that burden has been the achievement in lifting the curtain of ignorance which has blanketed the human mind and in bringing education and enlightenment, with growing pains, to more and more human beings.

We are on the march!

THE CHALLENGE IN THE ADVERSITY FACING US

But in today's world we are most grievously challenged. For the challenge we may be infinitely grateful, because our society today faces adversity. There is a hill up which we must climb. We will not, therefore, decline in slothful ease and degeneration because we have a steep hill up which to climb. We have the capacity and the experience and the character; at least we have had. We must continually manifest it in order to pit ourselves against the lies which in our time assault the deep foundations of truth. These lies cannot prevail, even to the extent of setting civilization into a relapse, if we are worthy of our heritage.

And we can and will be worthy of that heritage if and as we awaken. The voice

of no one of us is powerful enough to awaken all the slumberers in today's world. That is not bad; it is good, because salvation need come through no new messiah.

It is far better that this awakening should come through the people, the little people if you will, as each awakens to the truth about individual man in a society under God—under the divine principle of order and of harmony. The world that is being reborn can well awaken not through the trumpets of messiahship but from the inner voice of spiritual consciousness.

But it becomes now our individual and collective duty to think these things through for ourselves, and in our free way to help our brother man to his needful awareness. Let us pass along the message of freedom. One day that message, in the words of the physicist, will reach critical mass and a chain reaction will begin.

THE CHALLENGE AND ITS ACCEPTANCE ILLUSTRATED

Meantime, we must preserve the physical defenses of the Western World by keeping military aggression at bay. And in the last 115 or 120 days you and I have seen the most amazing illustration of the awakening of peoples.

I was in Korea in 1947 and I talked with General MacArthur in Tokyo on several occasions in that year; I was in close touch with authorities in Washington this spring as well as in Western Europe; and I do not believe that anyone before June 25, 1950 expected that the Western World would successfully take a stand against Communist aggression in Korea. Korea had virtually been written off by nearly everyone. We did not have the physical force, the Congress, the President, the Pentagon, the State Department, all of them, had said; perhaps we will make a loud noise at Lake Success, but that is about all that is likely to happen.

But what took place on June 25, 1950? The Communist aggression took place on that date. And then the peoples everywhere in the free societies showed that they had genuinely learned the lessons of Munich. Their responsible leaders were on the alert too; one must not take any credit away from them. But the true significance of events this summer was that the people refused to permit a totalitarian aggression to take place and the whole succession of most unexpected, well nigh miraculous events took place.

In the first place, against all the weight of practical experience, against all the military rules, General MacArthur was able to commit his forces to battle piecemeal. The first precept is that you cannot successfully commit your forces piecemeal. General MacArthur had no alternative and he did it, and those forces were able to hold up the Communist drive just long enough to make that build-up down at the tip of the peninsula, which again made possible a counter-offensive, and then in that remarkably short time we were able to mount the amphibious landing at Inchon.

What has happened in the last 100 days it seems to me illustrates the possibility of an awakening.

We face now two or three immense tasks, but we face them with new confidence. The first task is the need of helping to unify and set up as a free government the Republic of Korea. Although before June 25 nobody could have dreamed it possible, it is now possible to make Korea a kind of object lesson for the colonial areas of the soft spots throughout the world. In addition we have the responsibility of galvanizing the nations of Western Europe to a more adequate realization of the danger there and of doing their part along with us in against everybody's expectation, we now force in Western Europe. And finally, creating an adequate and unified defense

see the possibility of revising the United Nations so that the voice of a free majority of nations can override the Big Power veto which was written into the charter and embedded in the Security Council.

All of these totally unexpected things have happened. Why? Because on June 25 we faced adversity and we responded. The people responded by demanding action, and thus the free system went into action.

It is necessary for us to apply this lesson in the solution of the other problems that we face, in the strengthening of the economic sinews and the stability of the free world, and, above all, within our own society we must lead our civilization to higher plateaus of demonstrated freedom and of achievement.

If we do accept this challenge, if we do our part in awakening ourselves to the revolutionary significance of our heritage and to the dynamic power of the system which has descended to us on a golden thread down through the millennia of human experience we have nothing to fear, provided we keep on proving the power of the free system in action and keep on making it clear to the rest of the world—above all, to the peoples of Asia—who yearn for spiritual values along with material achievements. If we do that, we will be laying a foundation of a stable society, and as we go forward from down below in the valley, those who have accepted the false doctrines of totalitarianism, whether of the right or of the left, will one of these days see the heights which we have been able to ascend and will join us on the continuous pathway ahead.

Medicine and Surgery • The traditional attitude of our society toward the healing arts is mirrored in the connotations associated with the words "medicine" and "surgery." Susanne Langer and others have noted that words possess not only explicit meaning, or signification and denotation, but also and equally important although less obvious and often differing widely in meaning, implicit meaning or connotation. Thus the word "medicine," which is derived from the Latin word "medicina" meaning "the healing art or a remedy," also has the connotation and in this case alternate meaning of "magical." The latter meaning of the word appears in the phrase "medicine man," signifying "shaman or magician," the precursor of the physician. The word "surgery" is derived from the Latin "chirurgia" and earlier from the Greek χειρ "hand" and εργον "work" and is defined as that branch of medicine which treats diseases wholly or in part by manual and operative procedures. The word "surgery," it is important to note, also has the connotation of "bloody and painful procedures which magically cut out disease." In view of the traditional attitudes of our society as mirrored in the connotations of these rather basic words associated with medical and surgical practice it is not surprising that medicine has experienced so much difficulty in progressing into the mature or "humanistic" phase of its development. *Maurice N. Walsh, "Concepts of Therapy," Proceedings of the Staff Meetings of the Mayo Clinic 25:544 September 13, 1950.*

LON W. MORREY, D.D.S., EDITOR

DECEMBER 1950

VOLUME 41 • NUMBER 6

Published by the American Dental Association
222 East Superior Street • Chicago 11, Illinois

THE Journal OF THE AMERICAN DENTAL ASSOCIATION

Editorials

Delegates vote to raise annual dues: increase becomes effective first of year

At the ninety-first annual session of the Association last month the House of Delegates, acting on a resolution presented the previous year, voted by more than a two-thirds majority to increase membership dues from $12 to $20 a year. The $8 increase goes into effect January 1, 1951.

The decision to raise dues at this time followed an exhaustive study and lengthy discussion by the Delegates of the report by the Board of Trustees regarding the Association's resources, needs and increasing responsibilities. This action by the legislative body promises to release the Association from the stringent financial position which it has occupied for the past five years.

Following the decision to increase dues, the House approved a budget for 1951 of $1,597,593 which provides a working budget of $1,315,429 and $282,164 earmarked for the General Reserve Fund.

A few members may question the desirability of rebuilding the Reserve Fund at this time, but most members will remember the hectic months from 1946 to 1948 when the need and demand for increased services plus increased costs and prices forced the Association to draw heavily on its reserves to finance its activities, even though many of those activities were heavily restricted. During that time the nest egg of $855,541 stood the profession in good stead, but by January 1949 the fund had been reduced approximately 50 per cent to $455,094.

The increase in dues in 1948 stopped this dangerous drain but it did not provide for any expansion of activities, any cushion against spiraling prices or any surplus for reserves. The action taken by the Delegates last month now will enable the Asso-

ciation to put its financial house in order and maintain the position of leadership in the social structure which it has acquired through the years.

The raise in dues will permit the profession to repay in full monies it was forced to borrow, in times of stress, from its reserves. It will enable the Association, within a few years, to increase its reserves so as to hedge against future inflation. It will provide additional resources to combat compulsory health insurance, enable the Association to increase its research and dental health educational programs and provide for a modest expansion of other activities which the profession is obligated to carry on in the interest of the public and the profession.

Dental health of the nation's children furthered by actions of House of Delegates

Of the one hundred actions taken by the House of Delegates at the ninety-first annual session of the Association, four are recorded here because of their significant bearing on the profession's efforts to improve the dental health of American children. Of immediate importance was the action taken to approve the fluoridation of drinking water. Others were the disapproval of training of dental nurses, the recommendation to expand facilities for the education of dental hygienists and the establishment of a dental atomic energy research program.

Data obtained from the few controlled water fluoridation studies which have been under way for the last five years have proved so promising that the House of Delegates, acting on a joint report presented by the Council on Dental Health and the Council on Dental Therapeutics, passed the following resolution:

Resolved, that in the interest of public health, the American Dental Association recommends the fluoridation of municipal water supplies when the fluoridation procedure is approved by the local dental society and utilized in accordance with standards established by the responsible health authority, and be it further

Resolved, that the American Dental Association recommends the continuation of controlled studies of the benefits derived from the fluoridation of water supplies.

This action, supported by similar actions taken by the American Water Works Association, the State and Territorial Dental Health Directors and the United States Public Health Service, opens the way for countless local dental societies to stimulate their civic authorities to install water fluoridation programs so that millions of American children will be benefited by this simple and inexpensive procedure.

The fluoridation process, however, even if universally adopted will not entirely prevent the ravages of decay. Children will still need pedodontic service of the highest professional quality. To assure the continuance and improvement of such service the House of Delegates, voicing its opposition to the training and employment of dental nurses,

Resolved, that in the interest of the dental health of children and the long range protection of the health of the public the American Dental Association oppose any plan in the United States or its territories designed to permit or authorize persons with less training than that required of dentists to render intraoral operative, surgical or prosthetic dental services.

Although vigorously opposing the training of dental nurses the House urged members of the profession to make more use of auxiliary personnel, particularly dental hygienists, in order to extend preventive dental care to more patients. Realizing that the number of dental hygienists in practice cannot begin to meet the demands of private dental practitioners and public health officials the delegates passed the following resolution:

Resolved, that the American Dental Association strongly recommends to the constituent societies that they foster a more rapid development of new facilities for the training of dental hygienists in accordance with standards established by the Council on Dental Education.

The fourth action in this group and one which ultimately may prove to be of greatest importance concerns the dental use of atomic energy. The use of atomic energy tracers in determining the permeability of dental tissues to various substances, as demonstrated through the early use of cyclotron produced isotopes and more recently through the use of pile produced isotopes made available by the Atomic Energy Commission, opens up a vast new field in dental research. Acting on the recommendation of the Atomic Energy Program Committee of the First District Dental Society of New York, the House directed the Council on Dental Research to appoint a subcommittee to study methods by which this latest discovery can be put to practical use.

Individually, each of these four actions commits the Association to a more intensive program of preventive dentistry for children. Collectively, they furnish the profession with a powerful weapon in its fight to improve the dental health of all the American people.

High school pupils debate the welfare state. Association provides informational material

Each year the National Association of Secondary School Principals selects a subject of national importance for the use of debating teams in America's 27,000 public and private high schools. This year the subject chosen is: "Resolved, that the American People Should Reject the Welfare State." This is a timely subject and one which will give the youth of the nation an opportunity to acquaint themselves with the many facets of the socialistic philosophy which, either by chance or carefully calculated design, is creeping into America's social and governmental structure. One of the most important and dangerous of these facets is federal compulsory health insurance, long advocated by the proponents of the Welfare State. It has long been contended, and rightly so, that the adoption of a national system of compulsory health insurance is the first step on the rough and rugged path to totalitarianism—a path earnestly to be avoided by the coming generation. In order to assist high school debaters to obtain a better understanding of compulsory health insurance, this Association is providing the high schools with a comprehensive packet of informational material pertinent to the subject. The packet contains a number of pamphlets and reprints of articles prepared by leading authorities who have made detailed studies of the operation of government controlled health programs in

other countries, and who have analyzed proposals for the establishment of a national system of compulsory health insurance in the United States. Included in this material is a copy of the April 1949 issue of THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION which contains a history of the compulsory health insurance movement, arguments for and against the systems taken from testimony before Congressional committees, dental manpower studies and information on dentistry in the National Health Service system of Great Britain. This material is being distributed by the Association as a public service to American youth in order to acquaint them with the facts and fallacies of an economic and political system which threatens their future.

The results of the debates in rural and city high schools have a healthful effect on the long-range political philosophy of the nation. The reading and research which the participants must do, and the presentation of their ideas on the thousands of high school platforms throughout the country, will provide not only the debaters, but their classmates and families as well, with a better understanding of the pitfalls and problems of a welfare state economy. Those that debate today, tomorrow will run the nation. The better they are prepared, the better they will perform their task. The National Association of Secondary School Principals is to be congratulated on focusing the attention of American youth on this serious problem. This Association is pleased to contribute material that will aid in its solution.

Fédération Dentaire Internationale launches an international dental journal

An aspiration, conceived at the turn of the century by the founders of the Fédération Dentaire Internationale, at last has become a realization with the launching in September of the *International Dental Journal*. The new 164 page quarterly, edited by Professor H. H. Stones of Liverpool, England, is an international medium for the exchange of scientific knowledge and public dental health information. As the official organ of the Fédération it will publish special articles prepared by leaders in the profession throughout the world and reviews and discussions of the essays presented at each quinquennial International Dental Congress.

The publication of an international dental journal is a tremendous undertaking but Professor Stones and his associates are equal to the task. The new journal, by stimulating the exchange of scientific views, will help break the barriers of national boundaries and native tongues and hasten the development of better dental educational standards in all countries so that all people may receive better dental service. Annual subscriptions may be secured for 2 pounds, 5 shillings ($6.30), from the British Publications Inc., 150 East 35th Street, New York City.

The ninety-first annual session of the American Dental Association

The ninety-first annual session of the American Dental Association October 30 to November 2 drew 11,608 members and guests to Atlantic City and was one of the most memorable in the history of the Association. While the House of Delegates, this year comprised of 389 members, made decisions which will affect the future of the dental profession and the dental health of the public, other members attended scientific sessions and table clinics, scientific, motion picture and technical exhibits, special luncheons, and meetings of councils and bureaus.

ELECTION OF OFFICERS AND TRUSTEES

At the end of the session, Harold W. Oppice, Chicago, assumed the office of president to succeed Philip E. Adams. LeRoy M. Ennis, Philadelphia, formerly trustee from the Third District, was made president-elect. Edward R. White, Jersey City, who was chairman of the committee on local arrangements for the ninety-first annual session, was elected first vice-president; Rear Admiral A. W. Chandler became second vice-president; and M. F. Jarrell, Alexandria, La., was elected third vice-president. Percy T. Phillips was reelected speaker of the House.

H. B. Washburn was reappointed treasurer for the ensuing year. Lon W. Morrey was reappointed editor for a term of three years. Harold Hillenbrand, who was reappointed secretary in 1949 for a term of three years, continues to serve as chief administrative officer of the Association.

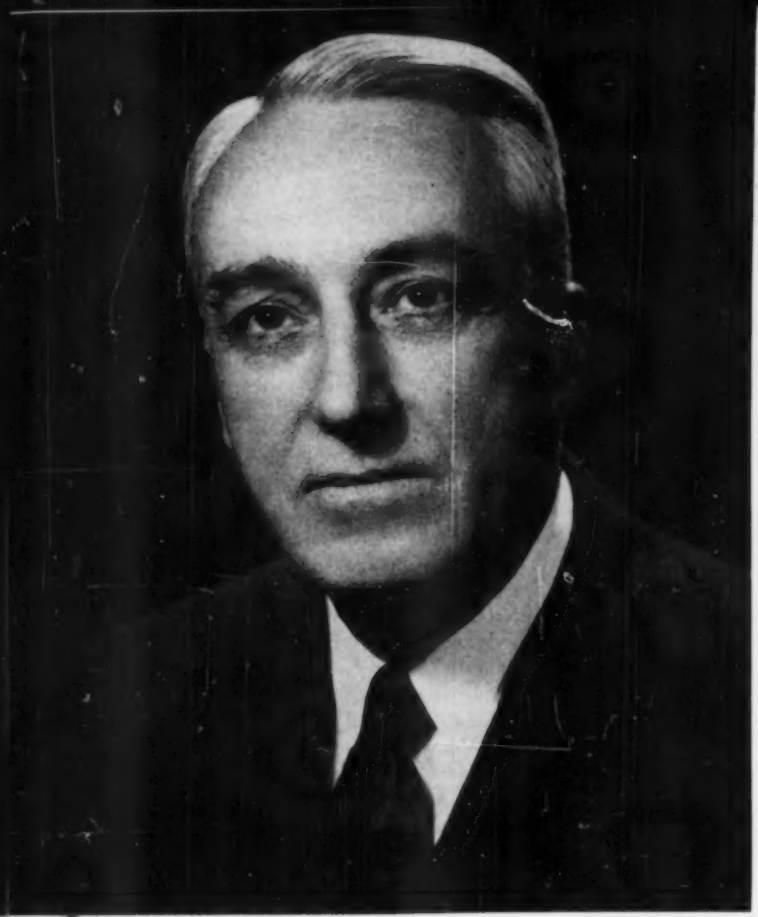
Five members were elected to the Board of Trustees to fill terms that expired in 1950. W. Earle Craig, Pittsburgh, was elected trustee from the Third District, succeeding LeRoy M. Ennis who became president-elect. Daniel F. Lynch, Washington, D.C., James E. John, Roanoke, Va., L. H. Jacob, Peoria, Ill., and Obed H. Moen, Watertown, Wis., were reelected trustees from the Fourth, Fifth, Eighth and Ninth Districts respectively.

LIFE AND ASSOCIATE MEMBERS

The Delegates approved the election to life membership of 317 nominees presented by the Board of Trustees, and elected to associate membership Donald A. Wallace, Evanston, Ill., and Gerald J. Cox, Pittsburgh.

HONORARY MEMBERSHIP

Honorary membership in the American Dental Association was conferred on Don W. Gullett, secretary of the Canadian Dental Association, for his "outstanding contributions to the advancement of the art and science of dentistry." The recognition of Dr. Gullett as an honorary member by the House of Delegates gave evidence "of this Association's wish to continue the very close cooperation which now exists between the dental associations of the two countries."



Harold W. Oppice of Chicago was installed as president of the American Dental Association November 2 at the ninety-first annual session in Atlantic City, to succeed Philip E. Adams of Boston. Dr. Oppice, who is Professor of Crown and Fixed Bridge Prosthesis at the Chicago College of Dental Surgery, Loyola University, has long been an active leader in dental affairs, both local and national. Following his graduation from the Chicago College of Dental Surgery, Loyola University, in 1920 he entered private practice in Marshalltown, Iowa. In 1924 he moved to Chicago. In addition to serving repeatedly as a member of the House of Delegates of the Association, he has served two terms as trustee from the Eighth District. He has served as president of the North Side Branch of the Chicago Dental Society; as treasurer, secretary and president of the Chicago Dental Society, and as a member of the executive council of the Illinois Dental Society. He has also served as editor of the *Illinois Dental Journal*.

Dr. Oppice is an overseas veteran of World War I, and is an honorary consultant to the Medical Department of the Navy. He has recently been appointed consultant to the Army Dental Corps.

LeRoy M. Ennis of Philadelphia was elected president-elect of the Association, to succeed Harold W. Oppice of Chicago who became president, at the ninety-first annual session of the Association in Atlantic City last month. Dr. Ennis, a member of the Board of Trustees from the Third District since 1944, is Professor of Oral Roentgenology at the Thos. W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania, where he obtained his professional education. He holds the same position in the Graduate School of Medicine of the University of Pennsylvania. He has been active in local, state and national affairs of dentistry for many years and has served as president of the Philadelphia County Dental Society and the Pennsylvania State Dental Society. He is secretary of the newly organized American Academy of Oral Roentgenology and has been secretary of the Association's Section on Roentgenology, of which he was also a founder. His textbook, *Dental Roentgenology*, is now in its fourth edition.

During World War I, Dr. Ennis served two years in France in the Dental Corps of the First Division, U. S. Army, and until 1934 held a captain's commission in the Army Reserves. From 1934 to 1945 he was a lieutenant commander in the Naval Reserves. He is consulting dental radiologist in the Army, Navy, Veterans Administration, Public Health Service, and the University of Pennsylvania Hospital.

ACTIVITIES OF THE HOUSE OF DELEGATES

The House of Delegates voted to hold the 1953 session September 28 to October 1 in Cleveland. The 1951 session will be held October 15-18 in Washington; the 1952 session will be held September 8-11 in St. Louis.

The House adopted a revised code of ethics, voted against merging the duties of the Council on Hospital Dental Service with those of the Council on Dental Education, recommended the fluoridation of water supplies, approved the first Monday in February as Children's Dental Health Day for 1951, voted to raise active membership dues by $8 annually, approved a budget for 1951 of $1,597,593, approved the requirements of two specialty boards and voted to recognize public health dentistry as a specialty.

The Delegates took a stand against the Hoover Commission's proposal for a "United Medical Administration," and against licensure of dental laboratories and dental laboratory technicians. They urged better educational programs for auxiliary dental personnel and opposed the training of dental nurses. They voted to form a new Committee on National Emergency Dental Services to replace a similar one inactivated after World War II. The new committee will act as a clearing house to coordinate the program of participation by the Association in the military emergency. They made plans for studying the use of atomic energy in dentistry.

The first meeting of the House of Delegates was called to order by Percy T. Phillips, speaker of the House. Following the invocation by the Reverend Edward A. Moran, O.S.A., pastor of Saint Nicholas Church, Atlantic City, the chairman of the committee on local arrangements, Edward R. White of Jersey City, welcomed the Delegates.

Before proceeding with business, the Delegates heard an address by Representative Charles A. Wolverton (Rep., N.J.) who spoke of the place of government in affairs of health and dentistry and his hope for the continuance of "the American way."

REPORT OF THE PRESIDENT

President Philip E. Adams reported that Wilfred Terrell of Pasadena, Calif., had been requested to convey the greetings of the Association to the Australian Dental Congress in Sydney, and that Paul J. Aufderheide of Cleveland, Ohio, had been requested to convey the greetings of the Association to the American Dental Society of Europe at the Amsterdam meeting.

Dr. Adams reported on the actions taken by the Board of Trustees with respect to legislation for procurement of dental manpower. The matter was reported in the September 1950 issue of THE JOURNAL. He reviewed for the Delegates the developments following the Association's statement favoring utilization of the National Security Resources Board as the "agency to maintain a proper balance of dental manpower between the military and the civilian population," which was the stand taken by the House of Delegates in 1948. In accordance with the bill signed by President Truman, a civilian board has been created as an advisory group to Selective Service on which medical and dental personnel are included. Leo J. Schoeny of New Orleans has been appointed dental representative on this board at the national level.

Dr. Adams recommended the establishment of a special committee of the Association "to coordinate, in accordance with policies of the House of Delegates, and under the direction of the Board of Trustees, and in consultation with the staff of the Central Office, the program

under which the Association participates in the military emergency." Such a committee, similar to the former committee on National Emergency Dental Services, would act as a clearing house "to assure that those who are serving in government agencies as consultants or advisors are kept clearly informed of Association policy and program." His recommendation received the full support of the House.

ANNUAL BUDGET APPROVED

Next on the agenda was the report of the Board of Trustees which, along with the budget, was referred to appropriate committees for recommendations. The Board's final report to the House recommended a budget of $1,597,593 for 1951, based on estimated income, of which $282,164 was to be allocated to the Reserve Fund and $75,000 to the Contingent Fund. The budget was approved by the House of Delegates.

The Board asked the House of Delegates to rescind the standing resolution adopted at the 1949 annual session of the House which directed amendment of the Bylaws to reduce or eliminate dues for members called to active service in the event of war or national emergency. The policy would cause a loss of income of $10,000 annually to the Association, the Board reported, if the armed services were brought up to predicted strength, and would seriously jeopardize the financial support of the Association. The House of Delegates voted to rescind the resolution.

The Board, having been directed by the Delegates at the 1949 annual session to study "the possibility of developing a program under which constituent and component dental societies would be reimbursed in whole or in part for the loss of revenue incurred while acting as host to an annual session of the Association," reported that a special committee had consulted with the general chairmen of annual sessions held from 1935 to 1949. As a result of this study the Board concluded that no action was warranted to reimburse constituent and component societies when they act as hosts to annual sessions of the Association.

The Board reported that the survey of the Association's research program ordered by the Delegates at the 1949 session is being made by the five member committee, and will be continued so that a final report can be made at a forthcoming annual session.

The Board reported that the American Dental Foundation, founded twenty years ago to receive funds for dental research, had been completely inactive. The corporation has therefore been dissolved, and the assets of $1,213.48 have been placed in the Research Fund of the Association.

The fund set up by the Board, on the instruction of the House at the 1949 annual session, for "accepting funds from outside sources for the support of regular and special activities of the Association," now totals about $1,100. Contributions will be accepted from individuals and agencies, the Board reported.

The Board of Trustees acknowledged "publicly and with appreciation" the gift of $2,500 received from the American College of Dentists for the maintenance of a research assistantship in the Bureau of Chemistry for a period of three years.

The Board reported its adoption of a policy by which the expenses of the President of the Association on official visits to constituent societies are borne by the Association alone, and not by the constituent societies as honorariums or expenses of travel. The Board stated its belief that "such expenses are properly borne by this Association as a service to the constituent societies."

A resolution presented by the special Committee on Life Membership of the House of Delegates which would have amended the Bylaws "to prohibit the entry of new members into the life membership classification following the adjournment *sine die* of this session of the House of Delegates" was defeated.

After an exhaustive discussion of the Association's responsibilities and financial position, the proposal to raise active membership dues in the Association to $20 a year, an increase of $8 over the present $12, was approved by more than two thirds of the Delegates. The resolution had been prepared by the Council on Constitution and Bylaws on the instruction of the House of Delegates in 1949, for introduction at this year's session.

DENTAL SCHOOL REQUIREMENTS AMENDED

A resolution approving the amendments of the "Requirements for the Approval of a Dental School" was adopted. "A four year dental course of not less than 32 weeks nor more than 36 weeks for the regular academic year, and with not less than an average of 30 clock hours per week nor more than an average of 34 clock hours per week" was prescribed. A school which goes outside these limits may not be considered for approval by the Council on Dental Education. In another resolution, the House of Delegates voted that "formal credit in biology and/or physics, but not in English or chemistry, may be waived in the case of superior students (a 'B' average or better) with three or more years of college credit earned in an accredited college." Schools will be asked to submit credentials of students admitted under these regulations to the Council each year.

The House of Delegates voted to approve the requirements of both the American Board of Orthodontics and the American Board of Oral Pathology after the Council on Dental Education found that these boards met the requirements for the approval of examining boards in dental specialties.

Heretofore, approval by examining boards in dental specialties has been available only to citizens of the United States. In a resolution adopted by the House of Delegates, affiliate certificates may now be given by "those specialty boards desiring to give recognition to residents of Canada who are not citizens of the United States."

The House of Delegates rejected a resolution which would have merged the duties of the Council on Hospital Dental Service with those of the Council on Dental Education.

CODE OF ETHICS REVISED

A revised code of ethics was adopted by the House of Delegates and will be published in the January 1951 issue of THE JOURNAL. The revised code, "Principles of Ethics of the American Dental Association," was developed by the Judicial Council and a committee of the Board of Trustees.

The House expressed opposition to "the imposition of any federal tariff which would increase the cost of dental services to the public."

The Delegates directed the Council on Legislation to oppose the proposal of the Hoover Commission on the Reorganization of the Executive Branch of the Federal Government to combine the health activities of the Government into one "United Medical Administration." The Reference Committee on Legislation stated that the Council's experience with Civil Service in the Veterans Administration, where "progressive measures to improve the dental service have been obstructed by the Civil Service," warned against control by Civil Service of professional matters.

The House confirmed the policy established by the Board of Trustees in July 1950 regarding legislation affecting the securing of dental manpower by the Armed Forces as reported in the September issue of THE JOURNAL.

The House of Delegates expressed recognition of the support and assistance of Brig. Gen. Raymond O. Dart in the activities of the Registry of Oral Pathology. General Dart, who has been director of

the Armed Forces Institute of Pathology for the last two years, is now approaching retirement.

A resolution regarding the adoption of the American Dental Association revised "Specification No. 12 for Denture Base Material, Acrylic Resin or Mixture of Acrylic and Other Resins" was tabled until next year's meeting on the recommendation of the Council on Dental Research.

ATOMIC ENERGY IN DENTISTRY

The Council on Dental Research was instructed by the House of Delegates to appoint a sub-committee of three to study ways and means for proceeding with the study and use of atomic energy in dentistry, subject to availability of finances. The resolution was presented by the First District Dental Society of New York.

The House of Delegates approved the revised procedure of the Council on Dental Therapeutics for the evaluation and acceptance of dental products. The Council was commended by the Reference Committee on Dental Research for its "distinct contribution to dentistry."

FEDERAL DENTAL SERVICES

The Council on Federal Government Dental Services was commended by the Reference Committee for "the splendid work that has been performed" in its many activities. A resolution urging the appointment of an advisory civilian medical and dental committee to the chairman of the National Security Resources Board was adopted by the House of Delegates. At the same time it was noted that the policies suggested had already been carried out. The name of this Council was altered to "Council on Federal Dental Services."

The House of Delegates approved a resolution "that the Board of Trustees assign to some agency of the Association the task of developing a program for the participation of the dental profession in civilian defense." The Board of Trustees assigned this duty to the newly created Committee on Emergency Dental Service.

The House resolved also to establish as the policy of the Association "the establishment of civilian advisory boards to all dental activities of the federal government at the policy level." It resolved also to "recognize the present accomplishments and manner of operation" of Richard L. Meiling, director of the Office of Medical Services, Department of Defense, and to recognize the efforts of Bion R. East, assistant chief medical director for Dental Services of the Veterans Administration, and indicated its support of his efforts to "correct the untenable position in which dentistry finds itself in that agency." The House of Delegates resolved also that the Association take steps promptly "to correct this situation by administrative or legislative action."

The House of Delegates adopted a resolution urging state dental societies to negotiate with state vocational rehabilitation agencies for the establishment of a schedule of fees for dental rehabilitation services, for the appointment of a dentist on the professional advisory committee, and for the appointment of a dental administrative consultant when justified. The Delegates also approved criteria for providing dental services under the vocational rehabilitation plan.

CHILDREN'S DENTAL HEALTH DAY

The House of Delegates approved the first Monday in February as Children's Dental Health Day for 1951. Because of the difference of opinion held by dental societies regarding the most suitable date for Children's Dental Health Day, the House directed that the matter be given further study by the Council on Dental Health with a view to developing means by which constituent societies "who find this date unsuitable may participate in a program of a similar type with adequate

support from the American Dental Association."

FLUORIDATION OF WATER SUPPLIES RECOMMENDED

The House of Delegates approved the resolution presented by the Councils on Dental Health and Dental Therapeutics recommending the fluoridation of municipal water supplies "when the fluoridation procedure is approved by the local dental society and utilized in accordance with the standards established by the responsible health authority." The continuance of controlled studies of the benefits derived from fluoridation of water supplies was also recommended.

DENTAL ADMINISTRATION IN STATE HEALTH DEPARTMENTS

The Delegates adopted a resolution recommending that "dentistry be made a basic health service in all official state and community health programs," and that state dental societies be assisted by the American Dental Association in the effort "to prevent administrative control of public health dentistry from being relegated to other professions."

VA DENTAL FEES TO BE REVIEWED

The House of Delegates adopted a resolution which reiterated the policy of the Association that fees for dental treatment services in the Veterans Administration programs should be determined only at the state or territorial level, and recommended that in view of the social and economic changes which have taken place since the fee schedules were set up in 1946, constituent societies should survey the fees in effect in their respective areas. The Board of Trustees was instructed to make available for these surveys the advice and facilities of the Association's Bureau of Economic Research and Statistics, in order to develop uniform procedures, terminology and methods of reporting.

The House went on record against the New Zealand dental nurse plan and adopted a resolution opposing "any plan . . . designed to permit or authorize persons with less training than that required of dentists, to render intraoral operative, surgical or prosthetic dental services." Another resolution adopted by the Delegates requested that dental educational agencies be urged to provide undergraduate and postgraduate courses "which will enable dentists to make more of their services available to a larger number of people through the extended use of auxiliary dental personnel. . . ." In a further resolution, constituent societies were urged to accelerate the development of facilities for training of dental hygienists in order to keep up with the demand for the provision of preventive measures in private dental practice and in school and community dental health programs.

The House of Delegates approved a resolution that a special committee be appointed to "present a plan for the scientific operation of the annual meeting at the next annual session of the House of Delegates." A resolution adopted in 1949 that the states in rotation assign essayists and clinics to selected subjects at each annual scientific session was rescinded. A resolution was passed which eliminates the office of secretary from the list of section officers appointed annually by the Council on Scientific Session. Creation of a new Section on Dental Public Health also was approved by the House of Delegates.

A resolution that the quota of delegates and alternates of state societies be determined on the basis of membership figures which would include former members now in military service was rejected. Such dentists in military service may retain membership in the American Dental Association through a federal government dental corps. A resolution to re-

Meeting of the Board of Trustees in Atlantic City, 1950. Seated (l. to r.): Willard Ogle, Twelfth District; Robert P. Thomas, Sixth District; J. B. Carr, Seventh District; William McGill Burns, Second District; Gerald G. Burns, third vice-president; H. B. Washburn, treasurer; Janne Olson, secretarial staff; Philip E. Adams, president; Harold W. Oppice, president-elect; Obed H. Moen, Ninth District; LeRoy M. Ennis, Third District; C. S. Foster, Tenth District; Charles I. Taggart, First District; Daniel F. Lynch, Fourth District. Standing: L. M. Cruttenden, assistant secretary, and Harold Hillenbrand, secretary of the Association; Don M. Hamm, second vice-president; Bernerd C. Kingsbury, first vice-president; James E. John, Fifth District; L. H. Jacob, Eighth District; R. C. Dalgleish, Thirteenth District; Fred S. Shandley, Eleventh District; C. Willard Camalier, assistant secretary in charge of the Washington office

scind that section of the Bylaws which allows members of federal government dental corps to hold membership in the American Dental Association direct without first being accepted for membership in a component and a constituent society, except in time of war, was rejected.

The House of Delegates approved a resolution that Puerto Rican dentists who pay dues to the American Dental Association are to be recognized as members of the Association through their membership in the Colegio de Cirujanos Dentistas de Puerto Rico.

The House approved a recommendation that the Council on History be discontinued.

An amendment to the Bylaws "to limit the consecutive tenure of office of the trustees to two terms of three years each" was adopted by the House of Delegates.

The Delegates directed the Council on Constitution and Bylaws to prepare amendments to the Bylaws with a view to eliminating the advisory committees to the bureaus of the Association.

A resolution adopted by the Veterans Dental Organization of the Third District Dental Society, Greensboro, N.C., and approved by the House of Delegates, recommended that the Association take action to insure that dental examinations of inductees into military service be made by dentists or dental officers, that examination include full mouth intraoral roentgenograms, and that Selective Service and Defense officials provide proper facilities, materials and personnel for adequate examinations.

SURVEY OF INSURANCE PLANS

Three resolutions of the Council on Insurance were approved by the House of Delegates. The Council was authorized to request an analysis by the Great-West

Life Assurance Company of the present group policy with a view to increasing its usefulness to members of the Association, and to request an analysis of policies from other insurance companies. The Council was also authorized to extend its pilot study of insurance preferences of members of the Association, and was directed to study the "types of insurance, including social security, that might benefit the entire membership of the American Dental Association."

DENTAL LABORATORY ACCREDITATION

A revised "Program for the Accreditation of Dental Laboratories" on a state basis was adopted by the House of Delegates. The House adopted a resolution opposing "in principle all legislation for the registration or licensure of dental laboratories and dental laboratory technicians on the grounds that it is not in the public interest." An additional resolution expressing "disapproval of the issuance of exclusive franchises or licenses to individual dental laboratories" also was adopted.

APPOINTMENTS TO COUNCILS

Following are new council members elected by the House; and new chairmen of the Councils on Dental Education, Dental Health, Hospital Dental Service, Insurance, and Relief, appointed by the Board of Trustees:

Council on Constitution and Bylaws: E. B. Penn of Miami, Fla., 1953; C. E. Peterson of Rockville, Conn., 1953. *Council on Dental Education:* Otto W. Brandhorst of St. Louis, 1953; W. N. Hodgkin of Warrenton, Va., 1953; J. Roy Blayney of Chicago, 1953; Philip E. Blackerby of Battle Creek, Mich., 1951, to complete the term of Roy E. Elam of Nashville, Tenn., who resigned. Henry M. Willits of Dubuque, Iowa, succeeds R. W. McNulty of Los Angeles as chairman of the Council. *Council on Dental Health:* Robert A. Downs of Denver, 1953; Ray C. Petersen of Lewiston, Idaho, 1953; K. A. Easlick of Ann Arbor, Mich., 1953. David W. Brock of St. Louis was appointed chairman to succeed Leo J. Schoeny of New Orleans whose term expired. *Council on Dental Museum and Registry:* Paul E. Boyle of Bala Cynwyd, Pa., 1953; J. K. Young of San Francisco, 1953. *Council on Dental Research:* J. L. T. Appleton of Philadelphia, 1953; M. D. Huff of Atlanta, Ga., 1953. *Council on Dental Therapeutics:* L. W. Burket of Philadelphia, 1953; Harry Lyons of Richmond, Va., 1953. *Council on Dental Trade and Laboratory Relations:* Allison G. James of Beverly Hills, Calif., 1953; S. G. Standard of New York, 1953. *Council on Federal Dental Services:* Tracy K. Healy of Brooklyn, 1953; Granville Sherman of Memphis, Tenn., 1953. *Council on Hospital Dental Service:* Bernard Wakefield of Buffalo, 1953; Herman K. Elder of Pittsburgh, 1953. Stephen P. Mallett of Boston becomes chairman of the Council to succeed Edward C. Dobbs of Baltimore whose term expired. *Council on Insurance:* W. F. Huber of Milwaukee, 1953; Harry H. Sorrels of Oklahoma City, 1953. Paul W. Zillman of Buffalo becomes chairman of the Council to succeed L. D. Cleek of Charleston, W.Va. *Council on International Relations:* Don J. Aubertine of San Francisco, 1953; Andrew F. Jackson of Philadelphia, 1953. *Council on Journalism:* Walter L. Hyde of Minneapolis, 1953; W. L. Barnum of Portland, Ore., 1953. *Judicial Council:* H. B. McCarthy of Baltimore, 1953; R. G. Keyworth of St. Paul, 1953. *Council on Legislation:* Paul E. Jones of Farmville, N.C., 1953; T. J. McDermott of Cleveland, 1953. *Council on Membership:* F. J. Martin of Medford, Wis., 1953; Howard B. Higgins of Spartanburg, S.C., 1953. *Council on National Board of Dental Examiners:* Frank O. Alford of Charlotte, N.C., 1953; W. H.

Crawford of Minneapolis, 1953; Hardy F. Pool of Mason City, Iowa, 1953. *Council on Relief:* T. R. Cullen of Oswego, N.Y., 1953; Steve A. Garrett of Atlanta, Ga., 1953. Leo W. Kremer of Chicago was appointed chairman to succeed John S. Owens of Camden, N.J. *Council on Scientific Sessions:* W. A. Garrett of Atlanta, Ga., 1953; Wilbur D. Johnston of New Haven, Conn., 1953.

GENERAL MEETING AND OTHER EVENTS

The general meeting, addressed by President Philip E. Adams who showed color slides and movies taken during his trip to Hawaii, more than filled the hall to capacity. B. C. Kingsbury, first vice-president of the Association, introduced Dr. Adams and, quoting Ruskin, identified him with that small minority who not only are able to think but who also have vision. "For every thousand who can talk there is but one who can think; for every thousand who can think there is but one who can see," he said.

Highlight of the general meeting was the address by Erwin D. Canham, editor of the *Christian Science Monitor.* Dr. Canham explained the crisis of our time as one in which spiritual values must conquer over material ones, and expressed his belief that it was the challenge of this struggle which faced the nation and all of us as individuals. The basic need is "to understand and proclaim ourselves and our place in the world," he said. Speaking of the necessity for free economic activity, he said it was that which was at stake in the world today, and the need was for "an awakening to the spiritual obligation and heritage of our free economic system." So many members requested that Dr. Canham's address be published that it appears in this issue of THE JOURNAL on page 711.

FEDERAL DENTAL SERVICES

At a luncheon in honor of the chiefs of the dental corps of the federal dental services, Richard I. Nevin, Professor of Speech and English at St. Peters College, Jersey City, spoke on socialization from a layman's point of view and attacked the notion that democracy is a system of government which supports and sustains its citizens. The luncheon was opened by Ben Rosenwasser of Union City, N.J., vice-chairman of the local arrangements committee. Among distinguished guests introduced by R. H. Friedrich, chairman of the Council on Federal Government Dental Services, were Rear Admiral Bruce D. Forsyth of the Public Health Service; Bion R. East of the Veterans Administration; Brig. Gen. Oscar B. Snyder and Maj. Gen. Walter D. Love of the Army; Maj. Gen. George Kennebeck of the Air Force; Rear Admiral A. W. Chandler and Rear Admiral Spry O. Claytor of the Navy; Brig. Gen. Louis H. Renfrow of the Army and Selective Service; Philip E. Adams, president, Harold W. Oppice, president-elect, Harold Hillenbrand, secretary of the Association, and C. Willard Camalier, assistant secretary of the Association in charge of the Washington office.

PRESIDENT AND PAST PRESIDENTS

President and Mrs. Philip E. Adams were honored at a banquet and entertainment November 1. A special luncheon for past presidents of the Association was held October 31.

OTHER EVENTS

Social activities included a dance presented by the host New Jersey State Dental Society, a number of cocktail parties for delegates and their wives, and receptions for delegates, essayists and clini-

cians. Wives and families of members attended a series of events arranged by the women's entertainment committee under the chairmanship of Mrs. J. Ward Weaver of Pleasantville, N.J. Highlights of the entertainment features were sightseeing tours, and a luncheon and fashion show sponsored by the New Jersey State Dental Society at which each of the 900 guests received a gift.

SCIENTIFIC EXHIBIT AWARDS

Judges of the scientific exhibits awarded first place to the U.S. Naval Dental Corps which presented highlights of naval dentistry. The exhibit was sponsored by Rear Admiral Spray O. Claytor. Second place went to the exhibit on "Preparation for Practice; A Viewpoint plus How to Make It Real," sponsored by Thomas M. Meloy Jr., of the University of Pennsylvania School of Dentistry, Philadelphia. An exhibit depicting the research activities of the Armed Forces Institute of Pathology and the researches in dental caries by the Army Dental School, as well as investigations by the Army and Air Force Dental Corps at the National Bureau of Standards, took third place. Honorable mention winners and the subjects of their exhibits were: Cloyd S. Harkins, William R. Harkins and John F. Harkins of Osceola Mills, Pa., cleft palate prosthesis; Harry Kazis of Boston, complete mouth rehabilitation; Bion R. East, Dental Service, Veterans Administration, Washington, D.C., Veterans Administration dental program and the community; Joseph S. Land of New York, a new approach to the study of temporomandibular joint syndrome; E. A. Thompson and E. C. Thompson of International Falls, Minn., soap and wax anatomical models; P. Philip Gross and S. Gordon Castigliano of the American Oncologic Hospital, Philadelphia, oral malignancy; Abram Cohen, School District of Philadelphia, dental health education in a school system; James Jay and Robert L. Fisher, Dental Guidance Council for Cerebral Palsy, New York, dental treatment of the cerebral palsied; Noble G. Wills, Connersville, Ind., evolution in development of surveying and designing instruments for partial denture use; and Jesse V. Boswell, Springfield, Mo., the temporomandibular joint and full denture construction.

STATE SOCIETY OFFICERS

The Conference of State Society Officers of the American Dental Association met October 29 in Atlantic City and installed the following officers: Wilbur P. McNulty, Fort Wayne, Ind., president, succeeding Melvin E. Ralston, Pomona, Calif. George W. Matthews, Birmingham, Ala., vice-president, and Ralph R. Gibson, Denver, Colo., secretary.

A forum on the problems of State Dental Societies at state and national levels, moderated by Melvin E. Ralston, included presentations by five authorities. Harold Hillenbrand, secretary of the American Dental Association, spoke on the problem of direct membership in the Association; Charles H. Patton, president of the Pennsylvania State Dental Society, spoke on ways of bringing the state and constituent societies closer together; E. Jeff Justus, secretary of the Tennessee State Dental Association, discussed ways in which state societies could raise relief funds; J. C. Almy Harding, editor of the Southern California State Dental Association, discussed ways and means of ob-

taining worthwhile papers for publication; and James Robinson, executive secretary of the Southern California State Dental Association, talked about methods used for increasing membership in state societies. After a luncheon addressed by President Philip E. Adams, Francis J. Garvey, secretary of the Council on Legislation of the American Dental Association, spoke about current legislative problems at the national level. With regard to the draft law, Mr. Garvey stated that it was deficient in the respect that, although it provides that there shall be maintained a sufficient number of dental students at the present level, machinery has not been set up which will identify dental students early enough. At present the dental aptitude test is not taken until the year before entrance into dental school. However, it is hoped that eventually the test can be taken in high school, thus identifying potential dental students at an earlier age, Mr. Garvey stated.

The Conference was addressed by Harold W. Oppice, incoming president of the American Dental Association, who spoke of the Association's program for the coming year. Speaking of the problems brought about by the Korean War, Dr. Oppice reviewed the steps taken by the Association to cooperate with the Government in filling military dental needs without depleting dental care of civilians. Now that planning on the national level has been completed, and a definite plan of procedure formulated, the dental advisory committees "chosen by their respective constituent or component societies, will screen the special dental registrants for civilian essentiality," Dr. Oppice stated. Induction will begin after Selective Service Boards have classified these registrants. Dr. Oppice reminded the Conference that the Central Office is a reliable source of information regarding individual problems or misunderstandings that may arise, and that the Association is ready at any time to give assistance to state officers in clarifying such problems.

ASSOCIATED GROUPS

The *American Academy of Periodontology,* which held its thirty-fourth annual meeting in Atlantic City, installed Hunter S. Allen of Birmingham, Ala., as president to succeed Dickson G. Bell, San Francisco. Other officers elected were: James E. Aiguier, Philadelphia, president-elect, Clarke E. Chamberlain, Peoria, Ill., secretary; and Raymond E. Johnson, St. Paul, Minn., treasurer.

New officers of the *American Academy of Restorative Dentistry* which met in Atlantic City are: O. B. Coomer, Louisville, Ky., president succeeding Lester Bryant of Chicago; Paul K. Hill, Pasadena, Calif., president-elect. Kenneth A. Bignell, Chicago, was reelected secretary-treasurer. Walter A. Buchmann of Chicago and Morton Mortonson, Jr., of Milwaukee, were elected council members.

The *American Association of Dental Editors,* at its annual meeting in Atlantic City, elected William P. Schoen, Jr., of Chicago, president succeeding Maynard K. Hine of Indianapolis. Dorothea F. Radusch of Minneapolis was made president-elect. Other officers elected were Loren B. Taber of San Francisco, vice-president; Walter C. McBride of Detroit, secretary-treasurer; F. D. Ostrander of Ann Arbor, editor. The meeting, held in conjunction with the Council of Journalism of the American Dental Association, included a business session followed by presentations by Wm. P. Schoen, Jr., editor of the *Illinois Dental Journal;* and Watson Davis, editor of *Science Newsletter.* J. J. Hollister, business manager

President Philip E. Adams (right) relinquishes the duties of president to Harold W. Oppice of Chicago

LeRoy M. Ennis of Philadelphia, new president-elect, and Percy T. Phillips, speaker of the House for the third year

of the Association and Lon W. Morrey, editor of THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION, spoke on the business side of magazine publishing and on a survey of state dental periodicals made by the Council on Journalism. G. B. Denton, research consultant of the Association, discussed the problem of dental nomenclature as it concerned the dental editor. Walter L. Hyde, editor of *North-West Dentistry,* spoke on the problems of publishing a regional dental journal.

The *American Association of Dental Examiners* met in Atlantic City and elected P. L. Schwartz, New Brunswick, N.J., president; and John M. Hughes of Richmond, Va., Herbert L. Bunker of Junction City, Kans., and Archie A. Albert of Pawtucket, R.I., vice-presidents from the South, West and East respectively. Carl A. Bumstead, Lincoln, Neb., was made secretary-treasurer.

The *American Association of Public Health Dentists* installed William A. Jordan of Minneapolis as president to succeed Robert A. Downs of Denver. Dr. Jordan is dental director of the Minnesota State Department of Health. Other officers elected were Carl L. Sebelius of Nashville, Tenn., senior dental officer of the Tennesse State Health Department, secretary-treasurer; Richard C. Leonard of Baltimore, dental director of the Maryland State Health Department, editor; Fred Wertheimer of East Lansing, Mich., dental director of the

Edward R. White, chairman of the local arrangements committee, and Rep. Charles A. Wolverton (Rep., N. J.) addressing the Delegates

Erwin D. Canham, editor of the Christian Science Monitor, who addressed the general meeting, and Guy H. Hillman, president of the host society

President and Mrs. Philip E. Adams at the banquet and entertainment held in their honor November 1

Michigan Department of Health, publisher.

John W. Knutson, chief of the Division of Dental Public Health, U.S. Public Health Service, Washington, D.C., and John E. Chrietzberg, dental director of the Illinois State Health Department, Springfield, Ill., were elected members of the executive council.

The *American College of Dentists,* initiated 190 new candidates at its convocation ceremonies. Among them were three woman dentists. Newly installed officers are Henry O. Lineberger of Raleigh, N.C., president succeeding Walter H. Wright. Willard C. Fleming of Oakland, Calif., president-elect; Edgar H. Keys of St. Louis, vice-president. New

members of the Board of Regents are Robert S. Vinsant of Memphis, Tenn., and Kenneth C. Pruden, Jr., of Paterson, N.J. Otto W. Brandhorst of St. Louis was elected secretary, W. N. Hodgkin of Warrenton, Va., was made treasurer, and William J. Gies of New York became historian.

The woman dentists honored were Ruth E. Martin of St. Louis, Dorothy G. Hard of Ann Arbor, Mich., Dorothea F. Radusch of Minneapolis, and Grace R. Spalding of Birmingham, Mich., the latter in absentia.

Others honored were Maj. Gen. George Kennebeck of Washington, D.C., and Senator Lester C. Hunt (D., Wyo.), the latter in absentia.

The *American Dental Assistants Association* installed Evelyn B. Brett of Pittsburgh as president; Steve Ann Montgomery, Dallas, Tex., Marie Johnson, Portage, Wis., and Harriet Darling, Huron, S.D., as first, second and third vice-presidents respectively; Lillian Hoffman, Akron, Ohio, as general secretary; and LoRena Kelly, Newton, Kans., as treasurer.

Newly installed officers of the *American Dental Hygienists Association* are Blanche C. Downie of Philadelphia, president; Betty Krippene of Oshkosh, Wis., president-elect; Evelyn Hannon of Topeka, Kans., Laura Peck of New London, Conn., and Ann Ragsdale of Atlanta, Ga., first, second and third vice-presidents respectively; Margaret E. Swanson, 1735 Eye St. N.W., Washington, D.C., executive secretary; and Elizabeth Ferm, Minneapolis, treasurer.

The *American Denture Society,* at its twenty-second annual session held in Atlantic City, installed Harold L. Harris of Denver as president succeeding John W. Geller of Indianapolis. John R. Wallace of Winchester, Mass., was made president-elect. Other new officers are Chester Perry of Detroit, vice-president; Arthur L. Roberts of Aurora, Ill., secretary-treasurer. Cecil H. Bliss of Sioux City, Iowa, was elected to the executive council.

The *American Society of Dentistry for Children* held its nineteenth annual meeting in Atlantic City and installed Hugo M. Kulstad of San Francisco as president to succeed W. James Taub of Albany, N.Y. New president-elect is Earl L. Lampshire of Lincoln, Neb. George W. Teuscher of Barrington, Ill. was elected vice-president. Hugh A. Keenan of Corning, N.Y., was made secretary-treasurer. W. James Taub, Lawrence R. Burdge, Willard Hunnicutt and G. A. Jennings were elected to the executive council.

The *American Society of Oral Surgeons* held its thirty-second annual meeting in Atlantic City. The main theme of the scientific program was the responsibility of the oral surgeon in the control and the prevention of cancer and a simplified technio in the method of handling crippled children's disabilities such as cleft lip and cleft palate. Horace L. Cartee of Miami, Fla., was installed as president, succeeding Berto A. Olson of Hollywood, Calif. W. T. Ewing of Akron, Ohio, was made president-elect. D. V. McRimmon of Fort Worth was elected vice-president; and A. P. Williams of Louisville, Ky., was named secretary-treasurer. Ralph B. Rode of St. Louis was appointed to the executive council. Ruth F. Whalen was appointed executive secretary, with headquarters at 1112 E. Clay Street, Richmond, Va.

Josephine M. Irey of Denver was installed as president of the *Association of American Women Dentists* at its annual conference in Atlantic City. She succeeds Mable F. Thomas of South Orange, N.J. President-elect is Cornelia Thompson; secretary-treasurer is Lorraine Thompson. The Association of American Women Dentists made plans to provide funds to woman dental students in need of financial assistance.

The *International College of Dentists* installed as president Brig. Gen. Louis H. Renfrow of Washington, D.C. New presi-

dent-elect is Ernest Charron of Montreal, Canada. Oren A. Oliver of Nashville, Tenn., was made vice president; W. M. Sexton of Bristol, Va., was elected treasurer; Elmer S. Best of Minneapolis was reelected secretary.

A.D.A. Affairs

DENTISTS URGED TO INCREASE RELIEF FUND CONTRIBUTIONS

The mailing of Christmas seals to every member of the Association early in November marked the opening of the annual Relief Fund campaign. Members are urged to increase their contributions this year to help meet the increasing number of appeals for assistance. According to the Council on Relief, "mounting costs of living for relief recipients plus an increase in the number of distressed dentists seeking help from the Relief Fund make it necessary that every possible effort be made to send this year's total contributions above the $100,000 goal."

Contributions should be mailed to the American Dental Association Relief Fund, 222 East Superior Street, Chicago.

NEW LIST OF BOOKS AND PACKAGE LIBRARIES IS READY

A new list of books and package libraries available from the library of the Association has been prepared and will be sent on request from the library at the Central Office.

The third quarterly cumulative Index to Dental Literature is completed and has been distributed to subscribers, according to Donald A. Washburn, director of the Library and Indexing Service.

Dental Societies

D. C. DENTAL SOCIETY PLANS NINETEENTH ANNUAL CLINIC

The nineteenth Annual Postgraduate Clinic of the District of Columbia Dental Society will be held March 11-14, 1951, at the Shoreham Hotel, Washington, D.C. Francis J. Fabrizio, general chairman, has announced that a well balanced educational and scientific program of clinics and discussions by outstanding dentists is being arranged, as well as a variety of social functions for friends and families of dentists attending the Clinic. Clinicians, who will present one-day postgraduate courses, and their subjects are: Stanley D. Tylman, crown and bridge; J. Lewis Blass, practice management; Herbert D. Coy, plastic fillings; Edward L. Ball, periodontia; George Matthews, exodontia; and the prosthetics staff of the U.S. Naval Dental School, Bethesda, Md., prosthodontics.

Inquiries should be addressed to the executive secretary, Edward H. Steinberg, District of Columbia Dental Society, 1835 Eye Street, N.W., Washington 6, D.C.

GREATER PHILADELPHIA GROUP WILL MEET EARLY IN YEAR

The Greater Philadelphia Annual Meeting of the Philadelphia County Dental Society will be held January 31-February 1 at the Bellevue Stratford Hotel, Philadelphia. Nineteen eminent authorities will conduct 18 one hour clinics and one two hour clinic. Also on the program are 37 table clinics. A program on public

health will be centered around an evaluation of the present status of the problem of prevention of caries. According to Robert Adams, secretary of the society, it is expected that the meeting, which is one of the largest in the country, will be attended by close to 6,000.

Further information may be obtained by writing to Dr. Adams at 501 Stock Exchange Building, 1411 Walnut Street, Philadelphia 2.

CONNECTICUT DENTISTS LEARN CARE OF CEREBRAL PALSIED

Dentists from all parts of Connecticut attended a seminar on dental care of cerebral palsied children October 11 at the Newington Home and Hospital for Crippled Children. Sponsored jointly by the Connecticut State Dental Association and the Connecticut State Department of Health, the program included talks and demonstrations by Louis Spekter, chief of the Division of Crippled Children of the State Department of Health; and by James Jay, president, and Robert A. Fisher, secretary-treasurer of the Dental Guidance Council for Cerebral Palsy in New York City, as well as attendance at clinics in the occupational therapy, physical therapy and speech therapy departments at the Newington Home and Hospital and a demonstration by Elwood B. Rider, of the dental staff, who filled the tooth of a badly involved cerebral palsied boy.

It was reported that the desire for better understanding of cerebral palsy by members of the dental profession came about through inquiries from parents who had found it difficult to secure adequate dental care for their cerebral palsied children. A list of dentists who attended the seminar is to be made available to parents through the State Department of Health and through other agencies working with cerebral palsy.

The seminar was arranged by I. W. Eickenbaum of New Britain, chairman of the Subcommittee on the Treatment of Cerebral Palsy Sufferers of the Connecticut State Dental Association Council on Dental Health.

Dental Education

DEFER DENTAL STUDENTS AND TEACHERS, NSRB IS ADVISED

A recommendation that all dental students and teachers, and at least 5,000 pre-dental students a year, be deferred from military service in order to maintain adequate dental care for the nation, has been made to the National Security Resources Board by the Council on Dental Education and the American Association of Dental Schools. In a statement sent to NSRB by the two groups when they met together at the ninety-first annual session of the Association, it was urged that government agencies plan now to avoid the mistakes made during World War II when dental faculties and student bodies were dangerously reduced by Selective Service. The communication stated that "the most acute shortage is in trained dental teachers and research workers," and continued:

> A recent survey showed that there were approximately 600 fulltime and 1,600 part-time dental teachers and that there were about 200 fulltime faculty vacancies. More than 500 of the faculty members hold reserve commissions in the Armed Forces. These facts give emphasis to the urgent need to adopt measures which will preserve the faculties so as to insure a continuing supply of the maximum of well-qualified dentists.

The recommendation stated that dental students should be deferred as long as they make satisfactory progress in their

educational program and that after graduation they should be given opportunity to become fulltime faculty members or be required to accept reserve corps commissions.

It was recommended that dental schools, in attempts to increase the number of graduates, use means best suited to their own situation rather than undertake a standardized program.

It was recommended also that steps be taken to train some of the present dental students for teaching positions.

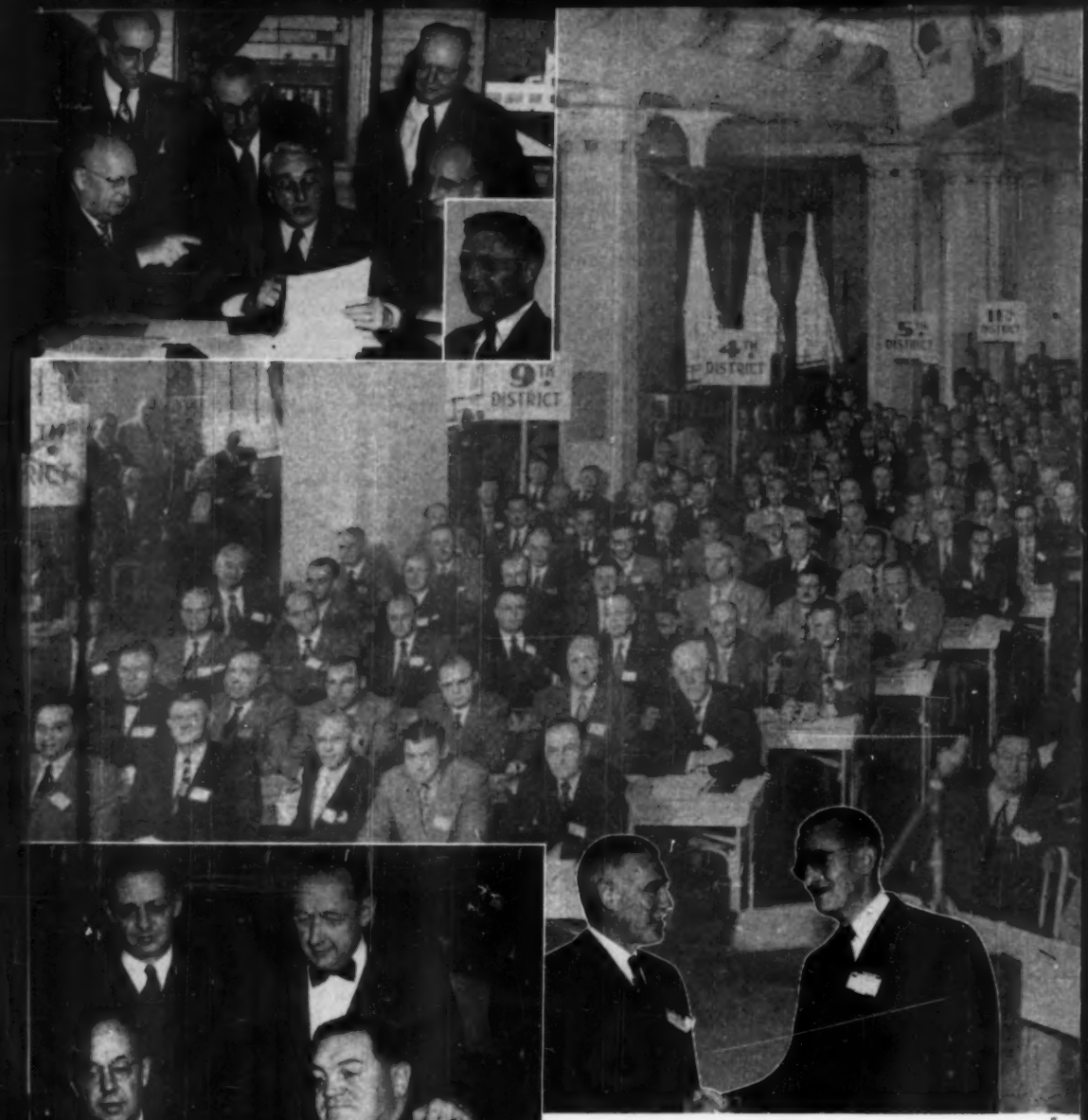
CALIFORNIA DENTAL SCHOOL OFFERS PEDODONTIA SEMINAR

A refresher course in dentistry for children is scheduled by the University of California College of Dentistry for January 15-19, 1951. The course consists of lectures, lecture demonstrations, and clinical practice and deals with patient management, cavity preparation and restoration of deciduous and young permanent teeth, pulpal therapy, caries control, roentgenography, child growth and development, maintenance of space, and the construction of appliances. Covered also are tooth guidance and the etiology of malocclusion, surgery, anesthesia and extractions, and the management of injuries to anterior teeth. Instructors, and chairman and associate chairman of the course respectively, are Charles A. Sweet, Jr., instructor in operative dentistry (dentistry for children) and instructor in postgraduate education (dentistry for children), College of Physicians and Surgeons, San Francisco, and Eugene West, demonstrator in orthodontics, College of Dentistry, University of California. Further information may be obtained from Gordon Fitzgerald, Dental Extension, University Hospital, University of California Medical Center, San Francisco 22.

Research

DENTAL PROGRAM FOR AAAS MEETINGS IS ANNOUNCED

Eight dental subjects will be presented during the three sessions of the Subsection on Dentistry at the annual meeting of the American Association for the Advancement of Science to be held in Cleveland December 26-30. The first session, December 29 at 7:30 P.M., will be presided over by Thomas J. Hill and will include an account of the dental research at the National Institutes of Health presented by H. Trendley Dean, and a discussion of the role of dentistry in atomic warfare civil defense by a speaker to be announced later. The second session, at 9:00 A.M. December 30, will be presided over by Isaac Schour and will comprise an account of past and present dental research in the Navy presented by Carl A. Schlack of the Office of Naval Research; a presentation regarding self curing resins by George Dickson of the National Bureau of Standards; and a report on studies of enamel and dentin permeability *in vivo* by Herbert J. Bartelstone of the Veterans Administration. The third session, at 2:00 P.M. December 30, will be presided over by Paul C. Kitchin. It will include a report of studies on the incidence of epithelial malignancies of the oral regions by Joseph L. Bernier of the Armed Forces Institute of Pathology; an account of an investigation regarding the role of filamentous organisms in dental caries, by George W. Burnett of the Army Medical Center, Dental Branch; and a presentation on the resistance of human molar teeth to decalcification caused by growth products of *Lactobacillus acidophilus,* by Hubert



The 389-member House of Delegates (background), representing the Association's 54 constituent societies at the ninety-first annual session October 30 to November 2 in Atlantic City, made decisions which will affect the future of dentistry and the dental health of the public. At the end of the session, the Delegates reelected four new trustees and elected one other to replace LeRoy M. Ennis, who became president-elect. At top left, Harold W. Oppice, who was installed as president, discusses plans for next year with President-Elect LeRoy M. Ennis, James E. John, reelected trustee from the Fifth District, L. H. Jacob, reelected trustee from the Eighth District, W. Earle Craig, newly elected trustee from the Third District to replace LeRoy M. Ennis, and

Daniel F. Lynch, reelected trustee from the Fourth District. Obed H. Moen (inset) was reelected trustee from the Ninth District. At lower left (seated), Philip E. Adams, president of the Association, and Edward R. White, chairman of the local arrangements committee, confer with (standing), Harold Hillenbrand, secretary of the Association, and Eugene R. Westcott, vice-chairman of the local arrangements committee, on plans for the meeting. The House of Delegates unanimously elected Edward R. White first vice-president, Admiral A. W. Chandler second vice-president, and M. F. Jarrell third vice-president. The three vice-presidents are shown, left to right, in the same order, at the upper right. On left page, lower right, William McGill Burns, trustee from the Second District, congratulates Don W. Gullett, secretary of the Canadian Dental Association, on his election to honorary membership in the American Dental Association. In the center, President Philip E. Adams addresses the House of Delegates.

B. Palmer of the Department of Air Force. All three sessions will be held in the Cleveland Municipal Auditorium. Headquarters will be at the Statler Hotel.

Advance registration is advised. Details can be obtained by writing to The American Association for the Advancement of Science, 1515 Massachusetts Avenue N.W., Washington 5, D.C.

BUREAU OF STANDARDS HAS BOOKLET ON DENTAL RESEARCH

A new circular released by the National Bureau of Standards describes the work done at the Dental Research Laboratory of the Bureau on the physical and chemical properties of dental materials, the structure of tooth enamel and dentin, clinical research, specifications for and certification of dental materials, and other problems, since 1919. The work described, which has been instrumental in improving dental materials and technics, was done at the Bureau with the assistance of the American Dental Association, the Armed Forces, and the Veterans Administration. A list of 156 Bureau publications on dental materials is included in the booklet.

Prepared by I. C. Schoonover and W. Souder, the booklet, Circular 497, *Research on Dental Materials at the National Bureau of Standards,* is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C., at 15 cents a copy.

International

MEXICAN DENTAL STUDY GROUP PLANS 1951 SEMINAR IN MAY

The fourth annual seminar of the Grupo de Estudios Dentales, U.S.C. de Mexico will be held May 13-16, 1951, in Mexico City. Inquiries should be addressed to the secretary, Robert E. Woodworth, Calzada Melchor Ocampo 487-302, Mexico, D.F., Mexico.

SEBELIUS TO RECEIVE WHO FELLOWSHIP, REPORTS STATE

Carl L. Sebelius of Nashville, Tenn., will be offered a World Health Organization fellowship to study dental conditions in Europe, according to unofficial reports.

Philip E. Blackerby, Jr., of Battle Creek, Mich., is already in Europe on a similar fellowship.

General

PRIZE ESSAY CONTEST ANNOUNCED BY ORTHODONTISTS

An essay contest with a cash prize of $500 is announced by the American Association of Orthodontists. Essays submitted must represent "an original investigation and contain some new, significant material of value to the art or science of orthodontics." Any member of the American Association of Orthodontists is eligible for entrance in the competition, as well as "any person affiliated with a recognized institution in the field of dentistry as a teacher, researcher, undergraduate or graduate student."

The winner will be invited to present his essay at the meeting of the American Association of Orthodontists in Louisville, Ky., April 23-26, 1951; the two

next best essays will receive honorable mention and their essays will become the property of the American Association of Orthodontics and will be published. All other essays will be returned. Right is reserved by the committee judging the essays to omit the award if none of the entries is considered to be worthy.

Essays must be submitted in triplicate to Wendell L. Wylie, Chairman of the Research Committee, American Association of Orthodontists, University of California Medical Center, San Francisco 22, Calif. They must be received on or before March 1, 1951.

Other specifications state that essays must be typewritten on 8½ by 11 inch white paper, double spaced with 1 inch margins. The name and address of the author must not appear in the essay, but his name, together with a brief biographical sketch which sets forth his professional training, present activity and status (practitioner, teacher, etc.) should be typed on a separate sheet of paper and enclosed in a sealed envelope bearing the title of the essay on the outside. Three copies of each paper, complete with illustrations, bibliography, tables, charts, and so forth, must be submitted.

R. D. DEAN DIES

Richard Doggett Dean, dean emeritus of the University of Tennessee College of Dentistry, died September 29 at the age of 66, after several months of ill health.

Dr. Dean had devoted the last thirty years of his life to dental education. During these years he played the major part in improvement of the dental curriculum, strengthening of the faculty, and bettering of the physical facilities of the University of Tennessee College of Dentistry. Born in Mississippi, he graduated with highest honors from the University of Tennessee College of Dentistry in 1922, after ten years in Seattle following graduation with a bachelor's degree in engineering from Mississippi State College in 1908. His service on the University of Tennessee faculty began in 1922 with his appointment as part time professor of oral pathology. He obtained his M.D. degree from the College of Medicine in 1928 and became professor

R. D. Dean

of oral medicine and surgery, and head of that division in 1933. He served as dean of the College from 1941 until his retirement in February 1950.

Dr. Dean's research made contributions to the understanding of undulant fever, and contributed also to the literature in the field of oral infections, especially Vincent's disease. His contributions were in every way shared by his wife, an associate professor of oral pathology at the dental college. Their teamwork extended into research in bacteriology, serology, immunology and oral pathology.

The faculty of the College of Dentistry paid tribute to both Doctors Dean, affectionately known as Dr. R. D. and Dr. M. T., with the organization of the Dean Honorary Odontological Society. His contribution to the university was recognized by O. W. Hyman, vice president of the university and dean of the college of medicine, when he said that Dr. Dean "accomplished a major improvement in dental education" during his long years of service to the university, and "developed a sound biological basis for dental procedures."

DENTIST NAMED ASSISTANT DIRECTOR AT MONTEFIORE

Samuel W. Friedman has been appointed assistant director of the Montefiore Hospital for Chronic Diseases in New York. Dr. Friedman, who obtained his D.D.S. degree from the University of Pennsylvania in 1928 and did postgraduate work at Columbia University, was previously in general practice. He took over his new duties November 1. Director of the hospital is E. M. Bluestone, M.D.

DENTAL HEALTH BOOKLET AIDS SCHOOLTEACHERS

Teachers in elementary schools in Sonoma County, California, are being aided in their efforts to instill proper habits of dental hygiene in their students, and to instruct them in matters of dental health, by a booklet supplied them by the Sonoma County Department of Health. The booklet, *Teachers Guide in Dental Health Instruction for Elementary Schools,* was prepared by the Sonoma County Department of Health under the supervision of Frank K. Sullivan, public health dental officer, and Robert S. Westphal, health officer. It contains a series of simple programs, one for each grade from kindergarten through the ninth grade, designed to show the teacher an easy way to interest children in dental care.

Dr. Sullivan, who is in charge of the County dental health program, operates one of the eleven mobile dental units in the State of California which visit county schools and perform roentgenographic examinations for all the students, and necessary dental treatment for children whose parents cannot afford private dental care.

Armed Forces

1,952 PRIORITY I DENTISTS REGISTERED UNDER DRAFT LAW; PHYSICAL EXAMINATIONS BEGIN; ADVISORY SUBCOMMITTEES TO BE FORMED

Selective Service has reported that, of the nearly 5,000 dentists in Priorities I and II who registered October 16 under the provisions of Public Law 779, 1,952 registrants were in Priority I and have been placed in the 1-A or 1-A-O (conscientious objector) classification. Physical examinations scheduled to begin November 15 were to determine their reclassification into the deferment or exemption categories according to the October 12 executive order of the President.

ARMY URGES DENTISTS TO APPLY FOR RESERVE COMMISSIONS

In the meantime, Maj. Gen. Raymond W. Bliss, Army Surgeon General, urged dentists subject to military service to apply for reserve commissions as soon as possible. He reminded them that those holding reserve commissions are not subject to induction, but are subject to recall under allocations approved by the Director of Medical Services. The Surgeon General stated that everything possible would be done to speed the processing of applications for reserve commissions, and that provided an applicant's papers are in order and his physical condition meets requirements, he should receive his commission within four to seven days after his application is received. Dentists who are inducted into military service and subsequently receive commissions are not eligible for the $100 monthly incentive bonus.

NAVY NEEDS ARE LOW

Although the Navy has stopped accepting applications for reserve commissions by Priority I dentists, Priority II dentists may still apply.

4,989 DENTISTS REGISTERED

Following is a breakdown, by states, of the dentists registered and classified.

State	Number registered	Number classified 1-A or 1-A-O
Alabama	32	17
Arizona	20	9
Arkansas	31	13
California	505	65
Colorado	35	7
Connecticut	82	23
Delaware	1	0
D.C.	60	19
Florida	90	56
Georgia	78	33
Idaho	19	11
Illinois	302	75
Indiana	84	29
Iowa	58	31
Kansas	49	16
Kentucky	52	10
Louisiana	65	16
Maine	18	4
Maryland	64	11
Massachusetts	172	51
Michigan	190	141
Minnesota	71	35
Mississippi	33	15
Missouri	86	32
Montana	14	7
Nebraska	37	14
Nevada	10	8
New Hampshire	12	9
New Jersey	176	104
New Mexico	12	1
New York City	741	450
New York State	298	89
North Carolina	75	36
North Dakota	6	0
Ohio	212	56
Oklahoma	49	15
Oregon	107	60
Pennsylvania	236	48
Rhode Island	30	16
South Carolina	32	23
South Dakota	13	4
Tennessee	84	31
Texas	160	42
Utah	44	4
Vermont	9	5
Virginia	68	20
Washington	109	80
W. Virginia	60	27
Wisconsin	109	23
Wyoming	3	2
Total 48 states and D.C.	4,903	1,893
Alaska	0	0
Hawaii	37	30
Puerto Rico	48	29
Virgin Islands	1	0
	86	59
Total incl. territories	4,989	1,952

The Defense Department has announced controls governing distribution among the services and determination of rank of medical and dental personnel subject to military service. The controls were set up to assure channeling of such professional personnel where the greatest need exists. The regulations were developed by the Department of Defense Policy Board in coordination with the Office of Medical Services and the three military departments.

DISTRIBUTION OF DENTISTS AMONG THE SERVICES

The formula for distribution of dental inductees to the three services is as follows:

	Allocation to services		
	Army	Air Force	Navy
First 500 accepted	98%	1%	1%
Next 1000 accepted	80%	19%	1%

Priority I dentists if the number exceeds 1500, and dentists in Priorities II, III, and IV, will be distributed to each of the three departments on the basis of 2 per

1,000 of authorized strength requirements of each of the services, the Defense Department states.

REGULATIONS REGARDING RANK

Regulations providing for determination of rank on the basis of age and years of experience are as follows:

Minimum years experience*	Grade		Maximum age
	Army and Air Force	Navy	
0	1st Lt.	Lt. (jg.)	33½
4	Captain	Lt.	39½
11	Major	Lt. Cdr.	48
18	Lt. Col.	Cdr.	50

* Exclusive of internship.

Under the regulations, dentists registered in Priority I "will be offered appointments as reserve officers in the service of their choice if they apply for commission prior to their pre-induction physical examination, and are ordered to active duty at the time of their appointment," the Defense Department states. The Navy, however, is reported to have stopped accepting applications for reserve commissions by dentists in Priority I.

Furthermore, dentists who served during World War II in a rank higher than that for which they are now qualified "may be appointed as reserve officers in their former grade, with a waiver of professional qualifications. Maximum age can be exceeded by an individual with prior service in the Armed Forces up to the number of years required to meet the years of professional experience."

NATIONAL, STATE AND LOCAL VOLUNTEER COMMITTEES WILL ADVISE SELECTIVE SERVICE

Howard A. Rusk, chairman of the National Advisory Committee appointed by President Truman to advise Selective Service with regard to the drafting of physicians, dentists and allied specialists, has announced the names of dentists appointed to the state Volunteer Advisory Committees in seven more states, Puerto Rico and the Virgin Islands. They are: *Indiana:* R. A. Bennett, Anderson; *Louisiana:* Wallace M. Nicaud, New Orleans; *Missouri:* B. O. Haun, St. Louis; *South Dakota:* C. K. Walker, Huron; *Texas:* B. Carl Holder, Cuero; *Vermont:* Maxwell L. Jameson, Burlington; *Wisconsin:* R. J. Mashek, Milwaukee; *Puerto Rico:* Pedro G. Delvalle, San Juan; *Virgin Islands:* Rudolph U. Anclos, St. Thomas.

Appointments to the committees in the other 41 states, Hawaii and the District of Columbia, were announced in the November issue of THE JOURNAL.

According to Dr. Rusk, each state chairman "will appoint, subject to confirmation of the National Advisory Committee, such additional members of the state voluntary committees as may be necessary to carry out its functions." Three additional dentists appointed to the Arizona State Advisory Committee are David H. Heron, Phoenix; J. W. Dixon, Winslow; and W. R. Pinkerton, Tucson.

Similar volunteer advisory committees are to be appointed at the local level, it is reported.

Separate medical, dental and allied professional subcommittees also are to be appointed at both state and local levels, to advise Selective Service at their respective levels concerning classification of personnel in their professions. Dr. Rusk emphasized that the committees are not a part of, but are advisory to the Selective Service System, and said that the Director of Selective Service, Maj. Gen. Lewis B. Hershey, has requested the state directors to "effect full cooperation with the state Volunteer Advisory Committees and with state and local subcommittees in their respective states."

Washington News Letter

Results of November's elections, combined with a rich crop of political imponderables, are making things difficult for those attempting to forecast what type—and how much—health legislation will be enacted by the new 82nd Congress which convenes on January 3.

House and Senate committees that handle national health bills are to be reorganized. Government spending, with particular reference to foreign aid, is almost certain to be cut back, with consequent implications to appropriations for grants to dental research and teaching. Civil defense is another big factor in this uncertain picture and so is the proposed enlargement of the military establishment; both of them will be up to the new Congress for decision. All of these future developments are inextricably linked with the qualitative and quantitative output of health legislation.

Upon his return to Washington in mid-November, Senator Robert A. Taft unhesitantly stated that the elections proved that Americans do not want socialized medicine. But when asked what he thought Congress would do on the affirmative side—federal support of dental and medical schools, subsidization of voluntary prepayment plans, support of medical and dental services for school children, and the like—the Senator was noncommittal.

He himself is ranking Republican member of the Senate Labor and Public Welfare Committee, which considers and holds public hearings on all proposed general health legislation. This committee, having lost two Democratic members and one Republican in the elections, will have a new chairman and several new faces next year, but one may be certain that Taft's will be its most influential voice. This is true even though the chairman probably will be Senator James E. Murray, principal congressional advocate of national health insurance.

Overhaul of the House Interstate and Foreign Commerce Committee, where most of the Fair Deal health measures were bottled up in the 81st Congress of 1949-50, will be even more extensive. Now comprising 17 Democrats and 11 Republicans, it will be altered to make the political division more nearly commensurate with the make-up of the House chamber. Total membership may be reduced to 27, composed possibly of 15 Democrats and 12 Republicans. Missing will be Rep. A. J. Biemiller (D., Wis.), most vocal friend of health insurance. Incidentally, the Senate committee, while continuing to have 13 members, is expected to have the ratio narrowed from eight Democrats and five Republicans to seven and six.

If all this sounds academic or irrelevant, remember that these political divisions in committees have considerable to do with the character and volume of medical, dental and hospital bills which make progress in the legislative mill. While it is undoubtedly true that the new Congress will hold aloof from any Fair Dealish measures, action definitely is in prospect on a number of health issues and the complexion of these committees will have an important bearing on how far that action goes. It will be recalled that Senator Taft is on record for government support of dental schools, school health services and local public health units. It will be interesting to see how far these programs go on Capitol Hill next year.

USPHS NATIONAL ADVISORY DENTAL RESEARCH COUNCIL

In compliance with congressional mandate, all advisory councils of the National Institutes of Health have been reconstituted so that each now includes at least six authorities in the medical sciences. New members of the National Advisory Dental Research Council are the following: Carl L. Sebelius, dental hygiene director of the Tennessee State Department of Health and chairman of the Committee on Dental Education, Tennessee Dental Society; C. A. Elvehjem, professor and chairman of the department of biochemistry, University of Wisconsin; Mrs. Charles D. Center, of College Park, Georgia, who is active in health councils of National Congress of Parents and Teachers.

The following have been reappointed to membership on the council: R. W. Harrison and Harold Hillenbrand, Chicago; Henry F. Vaughan, Ann Arbor, Mich.; P. C. Lowery, Detroit; Harold C. Hodge, Rochester, N. Y.; Paul C. Kitchin, Columbus, Ohio; Mark H. Harrington, Denver attorney; Hazel M. Halloran, New York social service worker; Watson Davis, Washington science writer.

VA DENTAL SERVICE PROGRAM

Statistics for the month of September on Veterans Administration's fee-for-service dental program disclose that size of the patient backlog is reaching astronomic proportions. During the 30-day period, approximately 42,000 cases on the waiting lists went unexamined and untreated for lack of funds. This is a peak figure for the last two and one-half years, according to a VA spokesman.

Applications for dental services in September totaled 45,000, which was 15 per cent below the previous month's figure. This reduction in itself was noteworthy, since monthly increases have been the rule since the spring of 1949 and the occasional declines have been relatively slight. Fee basis dental work in September aggregated $2,032,005 for 22,287 treatment cases and $185,930 for 14,021 examinations.

Bion R. East, assistant chief medical director in charge of VA's dental service, has announced appointment of Kenneth Pfeiffer as director of the Division of Research and Education. His former post was in dental research at the National Bureau of Standards.

HUNT RETURNS FROM DENMARK

Senator Lester C. Hunt, of Wyoming, was scheduled to return to Washington the latter part of November upon completion of a ten-day speaking tour in Denmark which was undertaken by invitation of the Danish-American Society. Accompanying Senator Hunt, who is a member of the American Dental Association, on the trip was Senator Ralph E. Flanders, of Vermont.

MARINE DENTIST FIRST IN KOREA

U. S. Marine Corps Headquarters is proud of Cmdr. Ramon J. Wallenborn, of Navy Dental Corps. A Chicagoan, Cmdr. Wallenborn served with First Marine Aircraft Wing in World War II and was the first dentist on the Guadalcanal combat area in 1942. When the same wing launched tactical operations in North Korea, he had the distinction of being the first dentist to enter that fighting zone. Nine of his ten years in the Navy have been spent with Marine aviation. He is a dental graduate of Northwestern.

Book Reviews

TEXTBOOK OF BACTERIOLOGY

By C. H. Browning, M.D., LL.D., D.P.H., F.R.S., and T. J. Mackie, C.B.E., M.D., LLD., D.P.H. Eleventh edition. 907 pages with 226 illustrations. Index. Price $12.75. New York: Oxford University Press, 1949.

This is the eleventh edition of Muir and Ritchie's *Manual of Bacteriology*, which was first printed in 1897. This edition has been completely revised and the entire book recast under the present title. Some of you may be familiar with the previous editions. However, as I am not I cannot judge the possible improvement in the text.

The present edition presents the subject in a very thorough manner. The approach is the same as is seen in other standard bacteriology texts of this type, opening with a comparatively short but adequate chapter on the general morphology and physiology of bacteria. Here, as well as throughout the book, is seen the tendency to use the nomenclature as advocated by the American systematists as represented in *Bergey's Manual of Determinative Bacteriology*. This is followed by a well organized and consequently easily understood chapter on the relation of bacteria to disease. It is on reading this chapter and the next one on immunity that one becomes impressed with the book. There is an apparent ease yet relative thoroughness with which these rather complicated subjects are handled.

The chapters following discuss in detail the pathogenicity of the various species of Eubacteriales (true bacteria such as the staphylococcus, the pneumococcus, etc.), the Actinomycetales (branching rods or filaments such as the Actinomyces and the tubercle bacillus), the Spirochaetales (spiral forms of syphilis, etc.) and the Rickettsiales (the organisms of typhus fever, etc.). Later chapters discuss the Virales (filterable viruses of smallpox, herpes and the "common cold"), the pathogenic fungi (yeasts and molds of thrush and ringworm) and the pathogenic protozoa as exemplified by the organisms causing malaria and amoebic dysentery. There is a chapter on bacteriophage, another on chemotherapy and one on the bacteriology of air, water, sewage, soil and milk. The book concludes with an appendix of ninety-one pages covering methods used in bacteriology.

T. L. Grisamore

HUMAN PATHOLOGY

By Howard T. Karsner, M.D., LL.D. Seventh edition. 927 pages with 562 illustrations, 14 in color. Index. Price $12.00. Philadelphia: J. B. Lippincott Company, 1949.

The seventh edition of this text by Doctor Karsner comprises an extensive revision of the subject material in view of the recent advances in the field of pathology. The text, in general, follows the established pattern for the teaching of general and special pathology. Part one, comprising the first twelve chapters, covers the subject of general pathology, including chapters on the general phenomena of disease, pathologic pigmentations, degeneration, inflammation, necrosis, atrophy, circulatory disturbances, infectious and granulomatous diseases. Progressive tissue changes and tumors are also completely covered. Part two, consisting of the remaining twelve chapters, is devoted to systemic or special pathology. In this section two new chapters, one by J. Lowell Orbison and John E. R. Keyes on diseases of the eye and the other on diseases of the skin by Herbert Z. Lund have been added.

The volume is profusely illustrated with both photomicrographs and photographs of gross pathologic specimens. Each chapter is followed by an extensive list of references. It is pleasing to note the number of references to recent literature used in this text which contributes markedly to its value. Over 800 new references were added to this volume.

Of particular interest to the dentist or dental student will be the section on diseases of the mouth comprising ten pages in the chapter on the alimentary canal. Also of special interest are the chapters on tumors and diseases of bones. This book can be highly recommended as a text for undergraduate pathology or as a reference on general pathology for the practitioner. Because of the scope of the volume, it remains only an introduction to the vast field of pathology. The material on special pathology of the oral structures, naturally, is by no means as complete and detailed as that found in other well known texts devoted exclusively to oral pathology.

The format of this volume is excellent making for a very readable book. The index appears to be quite complete.

Charles A. Waldron

Current Literature

THE ROLE OF CARBOHYDRATES IN DENTAL CARIES

George H. Green, Lieut. j.g. (DC) U.S.N.R. U.S. Nav. M. Bull. 49:920, September-October, 1949.

For the control of dental caries, prevention is needed. Systems of inspection and advice are good and necessary, but in themselves are futile and almost useless in stemming the tide of this national disease. No expenditure of public money for the treatment can be justified, unless that treatment strikes at the cause of the trouble, and gives some reasonable hope that the incidence of the disease will be materially lessened.

Carbohydrates are a needed item of food, and a lack can cause acidosis. However, it is also possible to get too many carbohydrates and if carbohydrates are consumed at the expense of necessary proteins and fats, malnutrition results. The present rate of consumption, over 140 pounds of sugar per year per person, presents the dangers incident to overeating.

The role of carbohydrates in the production of dental caries is found to be important in both the acidogenic and proteolytic theories. Dental caries activity can be reduced 70 to 90 per cent by the adoption of low sugar diets.

The total application of sodium fluoride can also reduce dental caries 40 per cent. Proper oral hygiene, the use of dibasic ammonium phosphate and urea, along with the caries control methods previously mentioned, should eventually check this widespread condition.

The use of a controlled carbohydrate diet is one of the best methods now available to prevent tooth decay.

JOURNAL OF DENTAL RESEARCH
June 1950

Titles marked with an asterisk are reviewed below.

*THE ORGANIC ELEMENTS OF THE ENAMEL. IV. THE GROSS MORPHOLOGY AND THE HISTOLOGICAL RELATIONSHIP OF THE LAMELLAE TO THE ORGANIC FRAMEWORK OF THE ENAMEL, *Reider F. Sognnaes, Boston, p. 260*

*THE INFLUENCE OF SOME SURFACE-ACTIVE SUBSTANCES ON DECALCIFICATION OF THE ENAMEL SURFACE, *J. P. Walsh and R. W. Green, Dunedin, New Zealand, p. 270*

*THE WEIGHT LOSSES OF INTACT TEETH IN DIFFERENT BUFFERS AT VARYING PH VALUES, *Jacob Yardeni, Jerusalem, Israel, p. 278*

*SOME PHYSICAL PROBLEMS INVOLVED IN THE APPLICATION OF SOLUTIONS TO TEETH FOR THE PURPOSE OF REDUCING DENTAL CARIES, *F. C. Besic, Chicago, p. 285*

*THE FLUORINE CONTENT OF SALIVA AND ITS RELATIONSHIP TO (A) ORAL LACTOBACILLUS COUNTS AND (B) THE PREVALENCE OF DENTAL CARIES, *D. J. Martin and I. N. Hill, Evanston, Ill., and Chicago, p. 291*

*EVALUATION OF THE COLORIMETRIC (SNYDER) TEST. I. COMPARISON OF POSITIVE COLOR REACTIONS WITH THE LACTOBACILLUS COUNTS OF RESPECTIVE SPECIMENS OF SALIVA ROUTINELY SUBMITTED FOR CULTURE, *Marshall L. Snyder and Margery K. Clarke, Portland, Ore., p. 298*

*ON THE OCCURRENCE OF THE LACTATE FERMENTING ANAEROBE, MICROCOCCUS LACTILYTICUS, IN HUMAN SALIVA, *H. C. Douglas, Seattle, Wash., p. 304*

*THE UTILIZATION OF CEREALS IN VARIOUS STAGES OF REFINEMENT BY AN ORAL STRAIN OF LACTOBACILLUS ACIDOPHILUS, *Samuel Dreizen, Henry I. Greene, and Tom D. Spies, Birmingham, Ala., p. 307*

*FLUORINE, ASH, CALCIUM, AND PHOSPHORUS IN HUMAN TEETH, *F. J. McClure, Bethesda, Md., p. 315*

*THE FAILURE OF AMMONIUM IONS TO INHIBIT THE GROWTH OF ORAL LACTOBACILLI, *W. F. Kirchheimer and H. C. Douglas, Seattle, p. 320*

*STUDIES ON THE INCIDENCE AND CAUSE OF DENTAL DEFECTS IN CHILDREN, IX. THE DECIDUOUS MOLARS: FISSURES AND CARIES, *Marcu Brucker, Newark, N. J., p. 325*

*PHYSIOLOGICAL TOOTH MIGRATION AND ITS SIGNIFICANCE FOR THE DEVELOPMENT OF OCCLUSION. II. THE BIOGENESIS OF ACCESSIONAL DENTITION, *Louis J. Baume, San Francisco, p. 331*

*PHYSIOLOGICAL TOOTH MIGRATION AND ITS SIGNIFICANCE FOR THE DEVELOPMENT OF OCCLUSION. III. THE BIOGENESIS OF THE SUCCESSIONAL DENTITION, *Louis J. Baume, San Francisco, p. 338*

*THE EFFECT OF PYRIDOXINE DEFICIENCY ON THE JAWS OF MICE, *Barnet M. Levy, St. Louis, p. 349*

*THE EFFECT OF X-RAY IRRADIATION ON THE DEVELOPMENT OF THE MANDIBULAR JOINT OF THE MOUSE, *M. S. Burstone, St. Louis, p. 358*

*SALIVARY AMMONIA AND ITS CORRELATION TO DENTAL CALCULUS. I. AMMONIA NITROGEN DEVELOPMENT FROM THE SUPERNATANT LIQUID AND THE RESIDUE OF CENTRIFUGED SALIVA DURING A NINE-DAY INCUBATION PERIOD, *Marvin Jacobson and Robert G. Kesel, Chicago, p. 364*

*SALIVARY AMMONIA AND ITS CORRELATION TO DENTAL CALCULUS. II. AMMONIA NITROGEN DEVELOPMENT FROM THE WASHED RESIDUE OF CENTRIFUGED SALIVA OVER A SEVENTY-TWO HOUR INCUBATION PERIOD, *Marvin Jacobson, Chicago, p. 375*

*SALIVARY AMMONIA AND ITS CORRELATIONS TO DENTAL CALCULUS. III. THE FATE OF SALIVARY MUCIN, NONMUCIN, AND AMMONIA NITROGEN OVER A SEVENTY-TWO HOUR INCUBATION PERIOD, *Marvin Jacobson, Chicago, p. 380*

*THE EFFECT OF PROPYLTHIOURACIL ON THE PERIODONTIUM OF THE HAMSTER, *David F. Mitchell, Rochester, N. Y., p. 386*

*HYALURONIDASE ACTIVITY IN HUMAN SALIVA, *Vincent F. Lisanti, Boston, p. 392*

*SOME MECHANICAL CHARACTERISTICS OF AMALGAMATORS, *N. O. Taylor, W. T. Sweeney and D. B. Mahler, Philadelphia, Washington, D. C., and Ann Arbor, Mich., p. 396*

*AN IMPROVED METHOD FOR THE PREPARATION OF "SERIAL" SECTIONS OF UNDECALCIFIED DENTAL TISSUES, *M. T. Jansen, Utrecht, Netherlands, p. 401*

THE ORGANIC ELEMENTS OF THE ENAMEL. IV. THE GROSS MORPHOLOGY AND THE HISTOLOGICAL RELATIONSHIP OF THE LAMELLAE TO THE ORGANIC FRAMEWORK OF THE ENAMEL

Reidar F. Sognnaes

The enamel lamellae have been studied grossly, in spreads, and in paraffin sections of carefully decalcified teeth from rats, monkeys and man. In erupted teeth these and similar organic bands were frequently found in regions where the enamel had suffered from traumatic injury. By means of thin paraffin sections the lamellae were found to run between the enamel prisms corresponding to the region of the prism sheaths, that is in areas of least resistance.

The lamellae failed to follow the pattern of enamel formation. This fact and the absence of the lamellae in unerupted teeth contradict the belief that the lamellae are formative defects. It is suggested that the lamellae and other organic membranes which infiltrate and cover the prism surfaces exposed by traumatic injuries to the enamel may serve as a nucleus for a crude reparative mineralization of such defects.

THE INFLUENCE OF SOME SURFACE-ACTIVE SUBSTANCES ON DECALCIFICATION OF THE ENAMEL SURFACE

J. P. Walsh and R. W. Green

The possible action of any substance in protecting wet tooth surfaces against attack by acid *in vitro* can be evaluated by comparison of the rate of dissolution of calcium under standard conditions in the presence and absence of the substance. Common oily and fatty materials have negligible protective value against the acid concentrations studied. Solutions of long-chain paraffin amines, such as cetylamine, in paraffin oil displace saliva from the enamel surface and form a stable oily film which can reduce decalcification at pH 4.0 by as much as 50 per cent over a period of 20 years. For a two-hour period the degree of protection is 70 to 80 per cent. It is suggested that the application of an oily solution of a long-chain aliphatic amine to the teeth may be of clinical value in the prevention of dental caries, since the initial lesion is generally regarded as a decalcification of the enamel surface.

THE WEIGHT LOSSES OF INTACT TEETH IN DIFFERENT BUFFERS AT VARYING PH VALUES

Jacob Yardeni

The work represents a quantitative study of acid solvent action on tooth structure. Intact teeth were placed in various buffer solutions, mainly lactate and citrate. The teeth were weighed on an analytical balance. The experiment was carried out in a thermostat in two series, one at 37°C., the second at 20°C. The analysis of the data permits the conclusion that the rate of dissolution is in the main a linear function of hydrogen-ion concentration. Rise in temperature is an additional factor affecting dissolution. The initial lag period in the dissolution of tooth substance seems to represent a threshold necessary to overcome some kind of a biological barrier against acid diffusion through the denatured protein of the organic channels. With decreasing pH the dissolution steadily increases. When approaching neutral-

ity, the buffer attack sinks asymptotically to zero; the slight dissolution may involve the carbonate fraction of the hard tooth structures. Powdered enamel is less soluble than is dentin; both passed through the same mesh screen.

SOME PHYSICAL PROBLEMS INVOLVED IN THE APPLICATION OF SOLUTIONS TO TEETH FOR THE PURPOSE OF REDUCING DENTAL CARIES

F. C. Besic

Two factors oppose the penetration of active molecules or ions of topically applied solutions into contact and similar areas: (1) the presence of saliva or air (which must be displaced by the active solution) and (2) the difficulty in diffusion of ions and molecules into narrow spaces.

Steel balls placed in contact with each other were treated with $CuSo_4$ solutions to show corrosion effects in all areas except actual contacting surfaces and surrounding areas. Ineffective reactions in the areas in contact were shown to be due to either trapped air or delayed diffusion of ions from the surrounding solution. The same results were observed by watching diffusion of methylene blue solutions into the tips of fine capillary tubes.

With present technics topical applications to teeth would appear to benefit mostly the easily accessible gingival third regions and least (if any) the pits and contact areas.

THE FLUORINE CONTENT OF SALIVA AND ITS RELATIONSHIP TO (A) ORAL LACTOBACILLUS COUNTS AND (B) THE PREVALENCE OF DENTAL CARIES

D. J. Martin and I. N. Hill

As a part of the Evanston Dental Caries Study the following investigations have been made: the analysis of saliva to determine its fluorine content, and the relationship between the fluorine content of saliva (a) to the oral lactobacillus count and (b) to the incidence of dental caries. The stimulated salivary specimens were collected on the Monday of each school week from 10 per cent of the children in the dental caries study. The specimens were collected before either the clinical or roentgenological examinations had been made. This part of the study was carried on for a period of one school year. The time interval of exposure to sodium fluoride, which has been added to the Evanston water supply since February 1947, varied in the two groups studied. The 6-7-8-year age group was exposed to the fluoridated water from 20 to 25 months and the 12-13-14-year age group from 25 to 29 months. In the 6-7-8-year age group the fluorine content of the saliva varied from 0.14 ppm. to 0.35 ppm. with an average of 0.25 ppm. and a mean of 0.27 ppm. A similar investigation is being made in the 12-13-14-year age group and will be included in the discussion to follow. The results of this investigation show no apparent relationship between the fluorine content of saliva to the oral lactobacillus counts or to the incidence of dental caries.

EVALUATION OF THE COLORIMETRIC (SNYDER) TEST. I. COMPARISON OF POSITIVE COLOR REACTIONS WITH THE LACTOBACILLUS COUNTS OF RESPECTIVE SPECIMENS OF SALIVA ROUTINELY SUBMITTED FOR CULTURE

Marshall L. Snyder and Margery K. Clark

An evaluation of the colorimetric or Snyder test for the estimation of numbers of lactobacilli in the saliva was made with specimens of saliva routinely submitted for culture. In a series of 2,016 specimens 2.4 per cent, containing less than 10,000 lactobacilli ml. saliva, caused positive color changes in the medium in 24 hours contrasted with 33.4 per cent of specimens with more than this number of lactobacilli. The percentages of positive color changes in 48 hours were 28.5 and 90.0 per cent, respectively. On the basis that caries activity is closely related to the number of lactobacilli in the saliva and positive color changes are dependent upon presence and to some extent numbers of lactobacilli, it should follow that consistent positive reactions in 24 hours should be associated with marked caries activity, and consistently negative tests in 48 hours should be associated with slight to negative caries activity. It was also found that there was no correlation between presence and absence of yeast-like organisms (Candida) and positive color changes compared with numbers of lactobacilli in the saliva.

ON THE OCCURRENCE OF THE LACTATE FERMENTING ANAEROBE, MICROCOCCUS LACTILYTICUS, IN HUMAN SALIVA

H. C. Douglas

Using differential plating technics it can be shown that *Micrococcus lactilyticus* is quantitatively one of the most important of the microorganisms indigenous to human saliva. The conversion of lactate to propionate, acetate, CO_2, and hydrogen appears to be the

principal biochemical conversion carried out by *M. lactilyticus* in saliva.

THE UTILIZATION OF CEREALS IN VARIOUS STAGES OF REFINEMENT BY AN ORAL STRAIN OF LACTOBACILLUS ACIDOPHILUS

Samuel Dreizen, Henry I. Greene and Tom D. Spies

It has been suggested that crude or natural carbohydrates contain a protective factor against dental caries. In considering the inability of oral acidogenic microorganisms to utilize various forms of carbohydrates, the possibility must also be included that certain factors conducive to bacterial growth may be either entirely absent, present in insufficient quantities, or present in an unavailable form. Among these factors are some members of the B group of vitamins and a starch splitting enzyme.

In this investigation, a study of the utilization of seventeen different cereal fractions and glucose by an oral strain of the *Lactobacillus acidophilus* in a chemically defined synthetic medium shows that an external source of some form of amylase is required for the maximal utilization of cereals by the oral *L. acidophilus* (Hadley). Under the conditions of this study, neither the cereal fractions nor the test organism, in the amounts used, contained amylase in amounts sufficient to promote the breakdown of polysaccharides.

An external source of nicotinic acid and thiamin is required for the maximum utilization of cereals by the oral *L. acidophilus* (Hadley). Several fractions derived from corn and wheat, comprising the germ or pericarp of the grain, were utilized to a slight extent by the test organism when nicotinic acid and thiamin were witheld from the synthetic medium. Presumably this indicates that the germ and pericarp of these grains, the portion richest in vitamin B content, contain nicotinic acid and thiamin in amount sufficient to promote minimal growth of this organism.

In the presence of an amylase and of adequate amounts of essential members of the B group of vitamins, the degree of acid production was, for the most part, directly related to the degree of refinement of the cereal grain.

FLUORINE, ASH, CALCIUM AND PHOSPHORUS IN HUMAN TEETH

F. J. McClure

The ash, calcium and phosphorus content of human enamel and dentin did not vary with caries experience or age. An eightfold increase in enamel-fluorine was not related to any change in enamel ash, calcium or phosphorus. A tenfold increase in dentin fluorine was not related to any change in dentin, calcium and phosphorus. There was a slight increase in the ash content of highly fluorosed dentin.

THE FAILURE OF AMMONIA IONS TO INHIBIT THE GROWTH OF ORAL LACTOBACILLI

W. F. Kirchheimer and H. C. Douglas

The effect of ammonia ions on the growth of seven strains of lactobacilli isolated from carious human teeth and from saliva and on the growth of *Lactobacillus acidophilus* (American Type Culture Collection #4646) was evaluated.

Two different media containing from 0.25 to 0.5 per cent of various ammonium salts were employed in these experiments. Growth was determined either by titration of acid formed or turbidimetrically with the Klett-Summerson photoelectric colorimeter.

The results show that ammonia salts added to culture media in concentrations of 0.25 to 0.5 per cent fail to inhibit the growth of the strains of lactobacilli tested.

STUDIES ON THE INCIDENCE AND CAUSE OF DENTAL DEFECTS IN CHILDREN, IX. THE DECIDUOUS MOLARS: FISSURES AND CARIES

Marcu Brucker

The fissure incidence in the first and second deciduous molars in a group of 2,211 white and Negro children of both sexes is reported. In general the lower first deciduous molars and the upper second deciduous molars were more frequently involved. The Negro children (male and female) showed a lower fissures incidence in the first deciduous molars and a slightly higher incidence in the second deciduous molars than the white children.

This study demonstrates that the incidence of fissures in the deciduous molars is low and can in no way compare with that of caries. It makes clear that to imply a direct relationship between the two is erroneous.

PHYSIOLOGICAL TOOTH MIGRATION AND ITS SIGNIFICANCE FOR THE DEVELOPMENT OF OCCLUSION. II. THE BIOGENESIS OF ACCESSIONAL DENTITION

Louis J. Baume

The development of occlusion was studied in 60 children. Through comparative measurements of serial plaster reproductions of their

dental arches before, during and after the eruption of the first permanent molars, three different mechanisms of normal occlusal adjustment were found: (1) the occurrence of a terminal plane forming a mesial step in the deciduous denture allowed the first permanent molars to erupt directly into proper occlusion without altering the position of the neighboring teeth; (2) the presence of a mandibular primate space and a straight terminal plane was conducive to proper molar occlusion by means of an early mesial shift of the mandibular deciduous molars into the primate space upon eruption of the lower first permanent molar; (3) closed deciduous arches and a straight terminal plane resulted in a transitory end-to-end relationship of the first permanent molars. Proper occlusion was effected through a late mesial shift of the mandibular permanent first molars subsequent to the shedding of the deciduous second molars. Migration of the lower deciduous and permanent molars constituted the physiological measure to secure proper occlusion of the permanent molars. There was no mesial shift of the mandible as indicated by the unchanged anteroposterior relationship of the opposing deciduous cuspids. Function and abrasion had less bearing on the molar adjustment than widely assumed. The anatomical pattern of the deciduous arches controlled the ability of the deciduous and permanent molars to migrate mesially as a result of the eruptive force of the accessional teeth.

PHYSIOLOGICAL TOOTH MIGRATION AND ITS SIGNIFICANCE FOR THE DEVELOPMENT OF OCCLUSION. III. THE BIOGENESIS OF THE SUCCESSIONAL DENTITION

Louis J. Baume

The comparative and biometrical examination of serial casts made of 60 dentitions before, during and after eruption of the permanent incisors demonstrated that expansion of the dental arches in the anterior region, to accommodate the larger successional incisors into proper alignment was brought about by a lateral and frontal alveolar growth during the time of the eruption of these teeth. The mean increase in intercuspid width was greater in the upper arches than in the lower ones, and again greater in previously closed upper or lower deciduous arches than in previously spaced ones. In the mandibular arches the strongest impulse of lateral growth was noted during the eruption of the lateral incisors. In the maxillary arches this occurred during the eruption of the central incisors. An occasional "secondary" spacing of the upper deciduous anteriors took place when the still undeveloped maxillary arch was somewhat widened upon eruption of the permanent lower central incisors. Spaced deciduous arches generally produced favorable alignment of the permanent incisors while about 40 per cent of the arches without spaces produced crowded anteriors. Forward extension of the arches was measured from a line connecting the distals of the cuspids. The averages revealed no difference between previously spaced and closed arches but were 1.0 mm. greater for the upper arches than for the lower ones. According to tooth measurements on the plaster reproductions this difference between the maxillary and mandibular forward extension could not be credited to a greater increase in thickness of the crowns of the upper permanent incisor over that of the lower ones. It was interpreted as an expression of an evolutionary tendency toward a lessened forward growth of the mandibular alveolar process.

THE EFFECT OF PYRIDOXINE DEFICIENCY ON THE JAWS OF MICE

Barnet M. Levy

Mice maintained on pyridoxine-deficient diets show a cessation of growth of the mandibular condyle, regressive changes in the alveolar bone, and ulceration of the epithelium of the interdental papillae, this epithelium being replaced by acute and chronic inflammatory cells and necrotic debris. The addition of large amounts of protein to the deficient diets causes these changes to occur earlier and to appear more severe.

THE EFFECT OF X-RAY IRRADIATION ON THE DEVELOPMENT OF THE MANDIBULAR JOINT OF THE MOUSE

M. S. Burstone

Thirty-eight Swiss and C_{57} black mice 2 to 7 days of age were irradiated in the area of the mandibular condyle using a contact type X-ray machine. The diameters of the irradiated field varied from 5 to 7 millimeters and dosages of 1,500, 3,000 and 5,000 roentgens were used. Following irradiation experimental animals and littermate controls were sacrificed at time intervals of 5 to 62 days. The heads were fixed, decalcified, embedded in paraffin, and sectioned. The characteristic radiation changes in the condyle are marked reduction or cessation of osteoblastic activity, marrow aplasia and subsequent fibrosis of the marrow. The greatest radiosensitivity is exhibited by the cells of the proliferative and hypertrophic zones. Ten days following irradiation osteo-

blastic activity is slowly restored and an immature fibrous type bone is formed adjacent to the damaged cartilage cells. Irregular trabeculae are formed and in some cases this fibrous bone appears to seal off the entire cartilage cap. The late postirradiation changes consist of an increase in activity of the cells of the undifferentiated and intermediate zone. However, it should be noted that hyperplasia of these zones is occasionally seen in normal animals.

SALIVARY AMMONIA AND ITS CORRELATION TO DENTAL CALCULUS. I. AMMONIA NITROGEN DEVELOPMENT FROM THE SUPERNATANT LIQUID AND THE RESIDUE OF SALIVA DURING A NINE-DAY INCUBATION PERIOD

Marvin Jacobson and Robert G. Kesel

The sediment and supernatant liquid of centrifuged saliva from calculus-present, calculus-free and periodontally diseased individuals, were tested for their ammonia nitrogen content. The samples were analyzed on the initial day and on the third, fifth, seventh and ninth subsequent days of incubation. Supernatant liquids contained much more ammonia nitrogen than did the sediments. Saliva of periodontally diseased individuals contained the most ammonia nitrogen in both the supernatant liquid and sediment of the three groups studied. Forty-five mg. per cent was the highest ammonia nitrogen content found in this group. The group with periodontal disease also showed much calculus deposit as well as the lowest *Lactobacillus acidophilus* counts. Bacterial action in saliva was found to be necessary for the ammonia nitrogen development.

SALIVARY AMMONIA AND ITS CORRELATION TO DENTAL CALCULUS. II. AMMONIA NITROGEN DEVELOPMENT FROM THE WASHED RESIDUE OF CENTRIFUGED SALIVA OVER A SEVENTY-TWO HOUR INCUBATION PERIOD

Marvin Jacobson

Saliva from thirty calculus formers and thirty nonformers was used in this experiment. The sediment of centrifuged saliva was thoroughly washed with sterile saline. This sediment was then allowed to remain in the saline for a period of 72 hours, during which time four ammonia nitrogen determinations were made, one every 24 hours. The percentage residue from 1 cc. of the fresh saliva sample was also determined analytically.

The results showed that statistically no difference could be found between the ammonia nitrogen production of the washed salivary sediment from calculus formers and calculus nonformers. The calculus-forming group showed, on the average, lower *Lactobacillus acidophilus* counts. The residue calculated in percentage of the total sample weight revealed the following results: calculus free residue 0.68 ± 0.025, calculus present residue 0.66 ± 0.019. Statistical analysis of these results again indicated no significant difference between the two groups.

SALIVARY AMMONIA AND ITS CORRELATION TO DENTAL CALCULUS. III. THE FATE OF SALIVARY MUCIN, NONMUCIN, AND AMMONIA NITROGEN OVER A SEVENTY-TWO HOUR INCUBATION PERIOD

Marvin Jacobson

Thirty-three saliva samples were used and classified according to the amount of calculus deposits found on the teeth. The groups formed were calculus-present, calculus-free and periodontally diseased. The samples were tested for their total nitrogen content by the Koch McMeekin technic, for their nonmucin nitrogen content by the Youngberg technic and for their ammonia nitrogen content by the Folin Bell technic. These tests were performed at the time the samples were obtained and every twenty-four hours thereafter for a total period of seventy-two hours. It was found that as saliva was allowed to stagnate the mucin nitrogen of all groups declined. The greatest decrease occurred during the first twenty-four hours in all the groups. The group with periodontal disease contained the greatest concentration of nonmucin nitrogen initially and produced the most during the incubation period. The calculus-present group contained more nonmucin nitrogen than did the calculus-free group. The periodontally diseased group also contained the most ammonia nitrogen and produced the most during the incubation period. The calculus-present group produced more ammonia nitrogen than did the calculus-free group. This experiment therefore shows that saliva from periodontally diseased individuals breaks down the most rapidly, the calculus formers next, and the calculus nonformers the least.

THE EFFECT OF PROPYLTHIOURACIL ON THE PERIODONTIUM OF THE HAMSTER

David F. Mitchell

Propylthiouracil was administered by drinking water in dosages from 0.05 to 0.10 per cent to

young adult hamsters for 186 and 449 days. In addition, four generations of animals were raised under the continuous influence of this drug.

No differences between the control and experimental animals were demonstrated by measurements of water intake, activity indexes, oxygen consumption, and serum cholesterol. Growth was inhibited in the experimental animals as evidenced by a lag in weight gain, decreased femur length, and histological findings in the femurs. The treated thyroid glands exhibited remarkable and consistent hyperplasia, grossly and microscopically. No observable increase in periodontal pathology due to this drug was noted.

HYALURONIDASE ACTIVITY IN HUMAN SALIVA

Vincent F. Lisanti

Human saliva was tested by the viscosimetric method using hyaluronic acid. Of sixty-four subjects, 75 per cent demonstrated activity. Significant correlation of activity was found with the number of decayed teeth. All periodontal disturbances tested had measurable activity.

SOME MECHANICAL CHARACTERISTICS OF AMALGAMATORS

N. O. Taylor, W. T. Sweeney and D. B. Mahler

The effect of mechanical amalgamation on the properties of dental amalgam alloy has not been studied extensively. The variables that affect such important properties as dimensional change, flow and strength have been the subject of many scientific reports. The wide use of mechanical amalgamators to replace the hand methods of trituration of the alloy and mercury makes it desirable to know more about the mechanical characteristics of the amalgamators. This study included three factors: (1) accuracy of timing; (2) effect of voltage variation; (3) effect of size of load on the amount of work done on the alloy-mercury mixture by several types of mechanical devices. Mechanical mixers operated on handpieces are subject to so many variables that they are not recommended. Of the three self-contained amalgamators tested, two were quite satisfactory from the standpoint of consistency of operation. Tests were made on 6, 12 and 18 grain specimens of alloy with ratio of alloy to mercury of 5 to 7. Inasmuch as directions are not usually available for all the amalgamators and brands of alloy on the market, the following procedure is suggested for use by the operator to find the correct mixing time for a specific alloy. Make several mixes by hand to fix in your mind which you consider satisfactory; then make several mixes in the amalgamator you wish to use, varying the time, amount of alloy and the alloy-to-mercury ratio. Select the combination, amount, time and ratio which gives the best mix as judged by comparison with the hand-triturated sample. Then use this set of conditions consistently in practice. When a different alloy is used, change the conditions, especially the mixing time, to suit this alloy and do not assume that all alloys should be mixed for the same length of time.

AN IMPROVED METHOD FOR THE PREPARATION OF "SERIAL" SECTIONS OF UNDECALCIFIED DENTAL TISSUES

M. T. Jansen

A circular diamond-charged phosphobronze sawblade, 0.60 mm. thick, causing little loss of material, is too unsteady for thin section cutting. The blade can be stabilized by mechanically stretching the periphery, the border of a central hole in the blade serving as cutting edge. This principle enables the cutting of four 1 x 1 cm. sections approximately 0.100 mm. thick per mm. of undecalcified dental tissue.

COUNCIL ON DENTAL TRADE AND LABORATORY RELATIONS

The dental laboratory issue: IV. The licensing bogie

The solution of the dental laboratory issue is hindered by marked differences of view touching the regulation of laboratories and the licensing of dental laboratory technicians by law. Dentists in the United States are almost universally opposed to such action. Groups of commercial laboratories and technicians in various parts of the country favor licensing and continue to agitate the question. The dental profession generally holds that the licensing of technicians is not a public necessity and that licensing would be a first step toward the independent practice of sub-dentistry by technicians. The laboratories and the technicians urge that the regulation of laboratories and the licensing of technicians by law are demanded to raise the standard of the work of the laboratories and to prevent bootlegging, which is frankly admitted, by both laboratories and technicians. In the debates, sometimes bitter, over legislative proposals in recent years both groups have singularly missed the main issue. Professional and trade interests have largely overlooked the broad stake the general public has in the issue.

Licensing as it is generally understood and administered by the states throughout the country is justified not primarily in the interest of a profession or a craft but on behalf of the public. The key to the question of statutory licensing turns upon situations where the safeguarding of life, health or property is concerned or involved. No statute in America, on its face at least, is designed to create a monopoly for a profession or a craft but rather to safeguard the public from incompetence and quackery.

In medicine, osteopathy, physiotherapy, nursing, podiatry, veterinary medicine, optometry, pharmacy, law, professional engineering and land surveying and architecture, the practice of the particular profession is clearly and explicitly defined. The practice thus defined is limited to persons licensed by the state after having satisfied the state's requirements as to age, character, education and fitness. Penalties are prescribed in all these professions for practice by unlicensed persons, and means are provided for the discipline or for the cancellation of the license of persons who are found guilty of malpractice or other violation of the express terms of the professional statute. In certified professional accountancy similar conditions prevail except that the practice of accountancy is not usually limited to certified public accountants. No person may employ the title of Certified Public Accountant, however, who does not satisfy the state's requirements for such certification. In some states, also, nursing is not restricted to registered nurses but no one may employ the title of Registered Nurse who does not satisfy the state's requirements for registration.

In like manner, in certain semi-professions the state exercises control. Thus the

practice of oral hygiene under the direction of licensed dentists is widely defined and limited to licensed persons. Opthalmic dispensing and certified shorthand reporting are also similarly regulated in some states.

In all these professions and semi-professions administered by the state two controlling features stand out: (1) the statute in every case is enacted primarily for the safeguarding of life, health or property; and (2) in every case the licensed or certified practitioner comes in contact with the public and may be held responsible by the public for any failure to practice the profession or semi-profession within the limits prescribed by law. Indeed, these same features characterize the state or local licensing of barbers, plumbers, beauticians, morticians, and other craftsmen.

The advocates of the licensing of dental laboratory technicians have wholly disregarded or overlooked these fundamental facts. Neither the commercial dental laboratory nor the technician has any responsibility directly to the public for the safeguarding of life, health or property. Everywhere in the employment of the work of the laboratory and the craftsmanship of the technician, that responsibility rests squarely where it belongs—on the dental profession. Moreover, the inevitable trend, whether dentists like it or not, is toward the universal employment of the commercial laboratory by dentists to provide the laboratory services they need in their practice. The commercial laboratory and the technician, if they obey laws on the statute books in every state in the nation, do not contact the public in any particular. The technician is responsible to his employer and the laboratory is responsible to the dentist whose prescription it fills. There is already law enough and to spare to protect the public, the dentist, the laboratory and the technician, if all interested parties are disposed to work within the law. There are, no doubt, areas where existing law is not fully enforced. The remedy is not more law but more enforcement.

The work of the commercial laboratory is legitimate and the expertness of the technician is important; but the same may be said of hundreds of industries, trades and crafts for which no concern is ever given to direct regulation and licensing by the state. The expert steel worker, the skilled technician in drug manufacturing, the highly specialized workman in the aviation industry, the expert in the fashioning of delicate surgical instruments, and hundreds of workers in other fields, are quite as important, useful and necessary to the public as the dental technician.

There is no public necessity for the licensing of the dental technician by the state. The one state which has undertaken it, South Carolina, is not sure of its ground. Frequent reference is made to the fact that the Provinces of Ontario and Quebec have embarked upon such a plan. Time will tell whether the licensing of technicians in Canada will serve a useful purpose as an example. The Canadian undertaking, based upon a philosophy of licensing quite different from that prevailing in this country, starts out with some promise of success but is still in the experimental stage. Socialized medicine works — or does it? — in England, but whether or not it works, our problem in this field also is our own. Some of the proposed legislation, advanced by laboratories and technicians, entails a difficult if not impossible basis of enforcement. A bill introduced in California in 1949 (Assembly, No. 1808) provided for the licensing of laboratories as such and for the licensing of four classes of technicians as follows: Master Dental Technician; Dental Technician Specialist; Dental Technician Helper; and Dental Technician Apprentice. It would take more than the proverbial "Philadelphia lawyer" to define and delimit these four fields. No other profession, semi-profession or craft

in America has deemed it necessary to go to such lengths of specification.

Similar legislation was proposed in Connecticut (House, No. 1001) in 1949. The purpose of this bill, as actually stated in the act, was "to create a board of Dental Technician Commissioners under the Dairy and Food Commissioner of the State of Connecticut for the purpose of licensing and regulating Dental Technicians and Dental Laboratories." This proposed act provided for the certification and registration of master dental technicians, the registration of apprentices and the regulation of laboratories. The existence of a dental practice act in Connecticut was ignored, the dental profession was not mentioned in the bill and no definition of the practice or service of the master technician and the apprentice was included. No apparent limitation was put upon the work the laboratory could do.

Nobody objects to the promotion of individual identities by laboratories and technicians. The laboratories are already well organized; they need only to have the good sense to pool their interests in one strong national association. There is no reason why dental laboratory technicians should not have a craft organization of their own on a national basis if they want it. It might help to clear the air if they would get together in this way. Observance of present dental practice acts throughout the nation by dentists, laboratories and technicians will solve the issues that now beset the industry, the craft and the dental profession. Let laws on the books be observed, let the accreditation plan on the state level have a fair trial, let laboratories and technicians cease quarreling with the hand that feeds them, let dentists everywhere cooperate squarely and legally with laboratories, and all this fuss will disappear.

COUNCIL ON DENTAL THERAPEUTICS

Council announces classification of additional products

The classification of products by the Council on Dental Therapeutics of the American Dental Association has been described in a previous report (*J.A.D.A.* 40:489, April, 1950). The Council's program now provides for classification of products in Group A, Group B, Group C and Group D. Products are reconsidered periodically and decisions are subject to change at any time that a substantial amount of new evidence becomes available. The files of the Council contain information on many drugs and dental cosmetics, and inquiries are welcome.

GROUP A

Listing of products in Group A means that at the time of their consideration, the items conformed with the provisions of acceptance established by the Council on Dental Therapeutics and adopted by the Board of Trustees of the American Dental Association. Items in this group will be listed in *Accepted Dental Remedies*, and may use the Seal of Acceptance, unless otherwise provided.

GROUP B

Listing of products in Group B means that there is insufficient evidence to justify their present acceptance, but there is reasonable evidence of their usefulness and safety. These products meet the other qualifications and standards established by the Council on Dental Therapeutics and the Bureau of Chemistry. It is the Council's opinion that Group B products may be promoted for special use and study.

The following product is classified in Group B:

Chembar (L. D. Caulk Company): A cavity lining material each 100 grams of which is stated to contain calcium hydroxide, 6 grams; zinc oxide, 6 grams; suspended in a chloroform solution of a resinous material. (Report follows.)

GROUP C

Listing of products in Group C means that the evidence is so limited or inconclusive that the products cannot be accurately evaluated. It is the Council's opinion that Group C products require further study by qualified investigators.

GROUP D

Listing of products in Group D means that they are unacceptable because of their demonstrated inability to meet the standards outlined in the provisions for acceptance.

Council classifies Chembar in Group B

The Council on Dental Therapeutics has classified Chembar (L. D. Caulk Company) in Group B for a period of one year.

Chembar is a cavity lining material, the active ingredient of which is stated to be calcium hydroxide which, together with zinc oxide, is suspended in a chloroform solution of a resinous material. Chembar is said to prevent the passage of phosphoric acid from silicate or zinc phosphate cements into the dentin. It has been established by several studies that the phosphoric acid of various cements is irritating to the pulp.[1,2]

The present formula resulted from several studies. One demonstrated that commonly used cavity varnishes were not entirely effective in controlling the irritant reaction.[3] The second study indicated that a varnish of the above formula did apparently provide protection to the pulp.[4] The studies were done on both animal and human teeth which were examined histologically for comparison of effectiveness of Chembar and other cavity varnishes as well as with the unprotected cavity.

The Council believes that the work reported reasonably establishes the usefulness of this formula, and justifies the classification of this product in Group B. Any further available evidence concerning this product will be reviewed when the classification of Chembar is reconsidered at the end of the one-year period.

1. Zander, H. A., The reaction of dental pulps to silicate cements. J.A.D.A. 33:1233 (Dec.) 1946.
2. Manley, E. B., Investigations into early effects of various filling material on the human pulp. D. Record 62:1 (Jan.) 1942.
3. Zander, H. A., and Pejko, Irene, Protection of the pulp under silicate cements with cavity varnishes and cement linings. J.A.D.A. 34:811 (June 15) 1947.
4. Zander, H. A.; Glenn, J. F., and Nelson, C. A., Pulp protection in restorative dentistry. J.A.D.A. 41:563 (Nov.) 1950.

BUREAU OF ECONOMIC RESEARCH AND STATISTICS

Nineteen fifty survey of the dental profession. V. The age and sex of dental patients

On Part II of the survey questionnaire,[1] respondents were asked to list each patient treated during the week of April 16 through April 22, 1950, indicating age, sex and type of dental service performed. Instructions were given to list each patient only once, even though he returned for more than one visit. This part of the questionnaire required considerable time and was answered by a smaller proportion of respondents than other questions. Nevertheless, data on almost 150,000 patients were recorded on the returned questionnaires. This sample was considered unnecessarily large, so a sub-sample of every fifth patient recorded by each respondent was used for obtaining the statistics on patients. In order to avoid

1. The first four articles of this survey appeared in the August, September, October and November 1950 issues of The Journal of the American Dental Association in the section entitled "Reports of Councils."

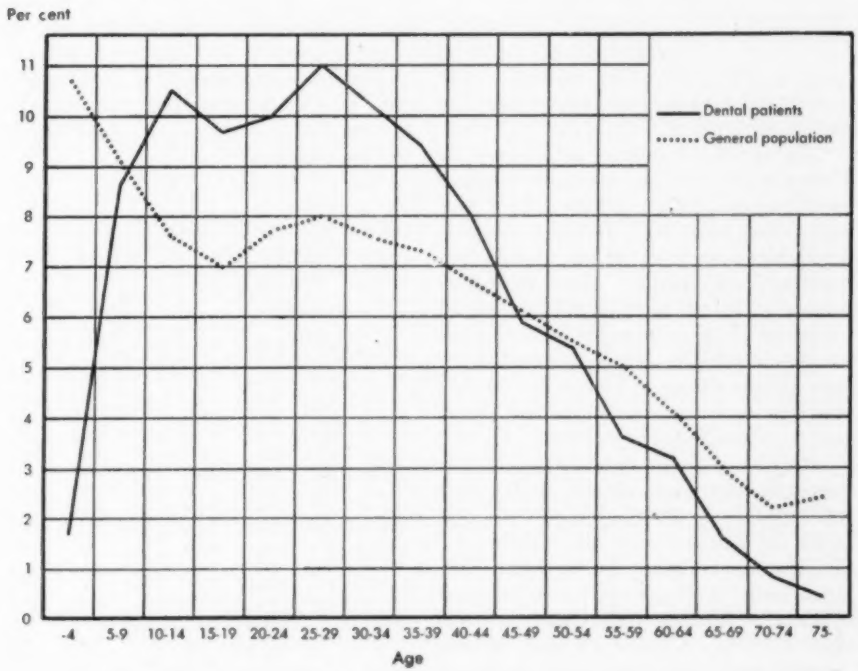


Fig. 10 • Percentage of dental patients by age groups during the week of April 16-22, 1950, as compared with percentage of general population

Table 39 • Percentage distribution of dental patients during the week of April 16–22, 1950, and of the general population, by age and by sex

	Dental patients			Population*		
Age	Male	Female	Total	Male	Female	Total
– 4	1.9	1.5	1.7	11.1	10.3	10.7
5– 9	9.9	7.6	8.6	9.4	8.8	9.1
10–14	11.9	9.6	10.5	7.8	7.4	7.6
15–19	10.2	9.4	9.7	7.0	7.1	7.0
20–24	8.4	11.1	10.0	7.5	7.9	7.7
25–29	10.0	11.6	11.0	7.9	8.2	8.0
30–34	9.6	10.7	10.2	7.3	7.8	7.6
35–39	8.6	9.9	9.4	7.2	7.4	7.3
40–44	7.5	8.3	8.0	6.7	6.7	6.7
45–49	6.2	5.8	5.9	6.1	6.1	6.1
50–54	5.5	5.3	5.4	5.6	5.5	5.5
55–59	3.9	3.4	3.6	5.0	4.9	5.0
60–64	3.4	3.2	3.2	4.1	4.1	4.1
65–69	1.7	1.5	1.6	3.0	3.0	3.0
70–74	0.8	0.7	0.8	2.1	2.2	2.2
75–	0.5	0.4	0.4	2.2	2.6	2.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Population figures are estimates of the civilian population on July 1, 1949, taken from Current Population Reports, Series P-35, Bureau of the Census, May 5, 1950.

possible bias, the first, second, third, fourth and fifth patients recorded on the sheets were taken with equal frequency.

The age distribution of dental patients during a week will not correspond exactly with that of a month or a year. In certain age groups more patients return for several visits than in other age groups. For instance, orthodontic patients return repeatedly. In an age distribution of all different patients during a year, the orthodontic patients would have relatively less influence than in an age distribution for a week, because an individual would not be counted more than once.

Only 32 of 29,574 dental patients were less than three years of age, or one tenth of 1 per cent. At the other end of the scale, 51 patients were 80 or older, and 91 was the maximum age recorded. Over two thirds (68.8 per cent) were between 10 and 44, inclusive, although only about half (51.9 per cent) of the general population was in that group (Table 39 and Figure 10). In general, it may be said that people older than 44 and younger than seven are below average in percentage seeing the dentist (Tables 44 and 45). Only 15 per cent of dental patients were over 49 years of age, whereas 22.2 per cent of the population was over 49 (Table 40).

Males aged 20 to 24 were considerably below the adjacent age groups and below females of the same age in attendance at the dentist (Table 39 and Figures 11 and 12).

There were more female than male patients in every age bracket (Table 41). For ages 20 through 44 the ratio of female to male patients was 1.62 (162 women saw the dentist for every 100 men). The ratio of female to male patients increased through ages 20-24, then gradually decreased. The extremely large ratio at ages 20-24 was caused partly by the dearth of male patients in that particular group. However, this large ratio was not greatly inconsistent with the over-all trend in the ratio. It has been said that the great preponderance of female over male patients at the marriageable age indicates that dental care is sought largely for the cosmetic effect.

Table 40 • Cumulative percentage distribution of dental patients during the week of April 16–22, 1950, and of the general population, by age and by sex

	Dental patients			Population*		
Age	Male	Female	Total	Male	Female	Total
– 4	1.9	1.5	1.7	11.1	10.3	10.7
5– 9	11.8	9.1	10.3	20.5	19.1	19.8
10–14	23.7	18.7	20.8	28.3	26.5	27.4
15–19	33.9	28.1	30.5	35.3	33.6	34.4
20–24	42.3	39.2	40.5	42.8	41.5	42.1
25–29	52.3	50.8	51.5	50.7	49.7	50.1
30–34	61.9	61.5	61.7	58.0	57.5	57.7
35–39	70.5	71.4	71.1	65.2	64.9	65.0
40–44	78.0	79.7	79.1	71.9	71.6	71.7
45–49	84.2	85.5	85.0	78.0	77.7	77.8
50–54	89.7	90.8	90.4	83.6	83.2	83.3
55–59	93.6	94.2	94.0	88.6	88.1	88.3
60–64	97.0	97.4	97.2	92.7	92.2	92.4
65–69	98.7	98.9	98.7	95.7	95.2	95.4
70–74	99.5	99.6	99.6	97.8	97.4	97.6
75–	100.0	100.0	100.0	100.0	100.0	100.0

*Population figures are estimates of the civilian population on July 1, 1949, taken from Current Population Reports, Series P-35, Bureau of the Census, May 5, 1950.

Table 41 • Frequency distribution of sample consisting of 29,703 dental patients during the week of April 16–22, 1950, by age and by sex, and ratio of females to males, by age

Age	Number of dental patients			Ratio of females to males
	Male	Female	Total	
– 4	236	261	497	1.11
5– 9	1,229	1,302	2,531	1.06
10–14	1,482	1,638	3,120	1.11
15–19	1,265	1,603	2,868	1.27
20–24	1,049	1,909	2,958	1.82
25–29	1,249	1,997	3,246	1.60
30–34	1,195	1,839	3,034	1.54
35–39	1,075	1,700	2,775	1.58
40–44	926	1,429	2,355	1.54
45–49	769	990	1,759	1.29
50–54	680	906	1,586	1.33
55–59	482	585	1,067	1.21
60–64	418	544	962	1.30
65–69	209	255	464	1.22
70–74	103	123	226	1.19
75–	57	69	126	1.21
No answer	57	72	129	1.26
Total	12,481	17,222	29,703	1.38

Table 42 • Ratio of female patients to male patients during the week of April 16–22, 1950, with differences in number of females and males in the population eliminated

Age	Ratio of females to males
– 4	1.15
5– 9	1.10
10–14	1.14
15–19	1.21
20–24	1.67
25–29	1.48
30–34	1.40
35–39	1.49
40–44	1.49
45–49	1.25
50–54	1.31
55–59	1.21
60–64	1.30
65–69	1.17
70–74	1.08
75–	1.01
All ages	1.34

Table 43 • Percentage distribution of dental patients 3 through 17 years of age, during the week of April 16–22, 1950, by age and by sex

Age	Male	Female	Total
3	1.8	2.3	2.1
4	4.0	3.6	3.8
5	6.0	4.9	5.4
6	6.2	5.7	6.0
7	6.7	6.5	6.6
8	7.2	7.4	7.3
9	6.9	6.2	6.5
10	8.6	7.4	7.9
11	6.3	5.7	6.0
12	10.1	9.7	9.9
13	6.2	7.7	7.0
14	8.4	8.1	8.2
15	6.4	8.4	7.5
16	9.0	9.7	9.3
17	6.2	6.7	6.5
Total	100.0	100.0	100.0

Table 44 • Estimated percentage of the general population* seeing the dentist during the week of April 16–22, 1950, by age and by sex

Age	Male	Female	Total
– 4	0.4	0.4	0.4
5– 9	2.2	2.5	2.4
10–14	3.3	3.7	3.5
15–19	3.1	3.8	3.5
20–24	2.4	4.0	3.2
25–29	2.7	4.0	3.4
30–34	2.8	3.9	3.4
35–39	2.6	3.8	3.2
40–44	2.4	3.6	3.0
45–49	2.2	2.7	2.4
50–54	2.1	2.8	2.4
55–59	1.6	2.0	1.8
60–64	1.7	2.2	2.0
65–69	1.2	1.4	1.3
70–74	0.8	0.9	0.9
75–	0.4	0.4	0.4
All ages	2.1	2.9	2.5

*Population figures are estimates of the civilian population on July 1, 1949, taken from Current Population Reports, Series P-35, Bureau of the Census, May 5, 1950.

There are more males than females in the population in each age group through 14, because there are consistently more male births. Beyond age 14 every age group has more females than males, because females have greater longevity. However, even with the differences in number of males and females in the population removed, females in every age group attended the dentist in greater pro-

Table 45 • Estimated percentage of the general population* seeing the dentist during the week of April 16–22, 1950, for ages 3 through 17 and by sex

Age	Male	Female	Total
3	0.6	0.9	0.8
4	1.3	1.4	1.4
5	1.9	1.8	1.9
6	1.8	2.0	1.9
7–9	2.5	2.9	2.7
10–13	3.2	3.7	3.4
14–15	3.2	4.2	3.7
16–17	3.4	4.2	3.8
Total	2.5	3.0	2.7

*Population figures for 5 to 17 year olds were taken from Current Population Reports, Series P-25, Bureau of the Census, May 8, 1950. Population figures for 3 and 4 year olds were taken from Current Population Reports, Series P-35, Bureau of the Census, May 5, 1950.

portions than males (Table 42). The difference was negligible, however, at ages over 74.

The proportion of the general population seeing the dentist during the week has been estimated by age and by sex (Tables 44 and 45 and Figure 12). The mean of 48.7 patients during the week reported by survey participants was multiplied by the estimated 76,000 practicing dentists. This computation indicates that approximately 3,700,000 persons saw the dentist during the week. The number for each age group was obtained by multiplying the proportion of patients in that group (Table 39) by 3,700,000.

Among males, a larger proportion of the age group 10 to 14 saw the dentist during the week than of any other age group (Table 44 and Figure 12). Among females, a larger proportion of those aged 20 to 29 saw the dentist than of any other age group. For males and females combined, the percentage seeing the dentist remains almost constant in the vicinity of 3.4 per cent from 10 through 34 years of age.

Two special tables have been prepared to give a finer age breakdown for children 3 to 17 years of age (Tables 43 and

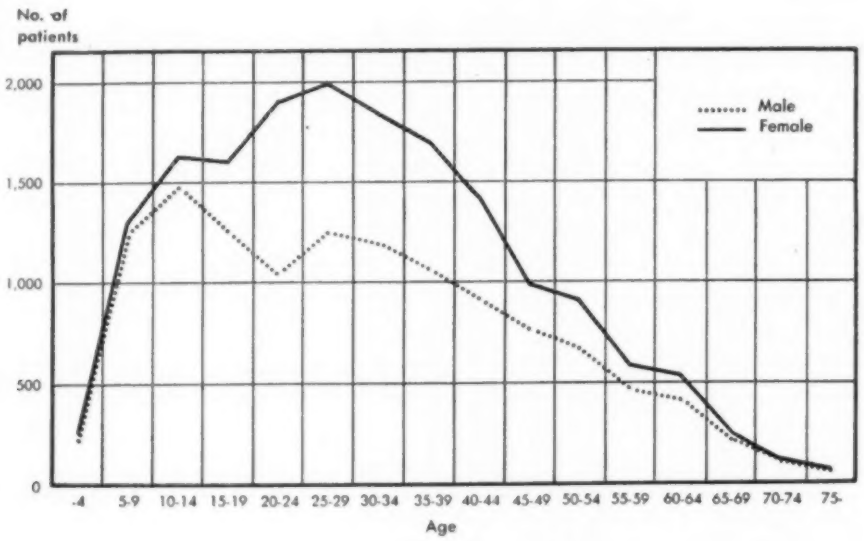


Fig. 11 • Comparison by age groups of the number of male and female patients during the week of April 16-22, 1950

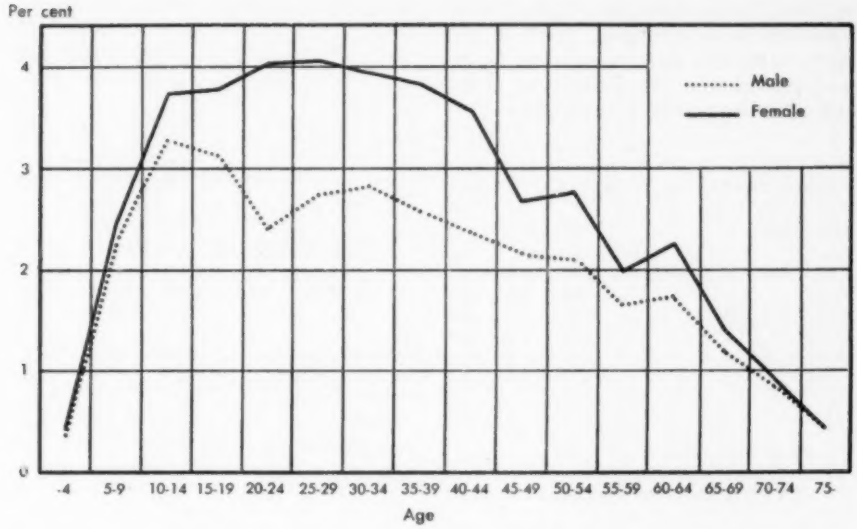


Fig. 12 • Estimated percentage of the general population seeing the dentist during the week of April 16-22, 1950, by age and by sex

45). Table 45 shows a gradual increase in percentage of children seeing the dentist throughout that age range. (Table 43 indicates that dentists had a tendency to estimate ages of child patients in even numbers.)

The next article in this series will present data on dental services provided to this sample of dental patients.

B. Duane Moen, Assistant Director
Leslie M. FitzGerald, Chairman, Advisory Committee

COUNCIL ON DENTAL EDUCATION

A comparison of the statistical reports on three entering dental classes

Through the Dental Aptitude Testing Program conducted by the Council on Dental Education, various personnel data are collected on all students in the dental schools. These data are compared with the various aptitude test scores and with the achievement grades and scores of the dental students as they continue their ed-

ucation program, and the results will be published in a later issue. Some of the more important data concerning freshmen students for the years 1946, 1947 and 1949 are herewith presented:

AGE OF FRESHMEN DENTAL STUDENTS

Age group	1946 %	1947 %	1949 %
55-64	0.0	0.0	0.0
45-54	0.1	0.1	0.0
35-44	1.5	4.7	0.7
25-34	51.6	82.2	37.0
-24	46.8	13.0	62.3
	100.0	100.0	100.0

SEX OF FRESHMEN DENTAL STUDENTS

	1946 %	1947 %	1949 %
Male	99.2	98.9	99.6
Female	0.8	1.1	0.4
	100.0	100.0	100.0

VETERAN STATUS

	1946 %	1947 %	1949 %
Veterans	87.3	91.2	73.0
Civilians	12.7	8.8	27.0
	100.0	100.0	100.0

PLACE OF BIRTH

Area	1946 %	1947 %	1949 %
New England	5.9	5.9	6.2
Middle East	23.2	23.0	25.0
Southeast	14.4	15.9	14.3
Southwest	6.0	7.2	5.9
Central	31.2	30.1	30.0
Northwest	7.6	8.0	7.9
Far West	7.6	6.4	7.2
Outside U. S.	4.1	3.5	3.5
	100.0	100.0	100.0

MARITAL STATUS

	1946 %	1947 %	1949 %
Married	46.8	44.3	37.4
Single	53.2	55.7	62.6
	100.0	100.0	100.0

OCCUPATIONS OF FATHERS

	1946 %	1947 %	1949 %
Non-professional	66.0	56.4	70.8
Semi-professional	5.6	17.3	4.0
Professional	28.4	26.3	25.2
(Dentists)	(10.6)	(12.9)	(10.9)
(Physicians)	(3.9)	(2.3)	(2.0)
	100.0	100.0	100.0

ACADEMIC DEGREES HELD BY FATHERS

	1946 %	1947 %	1949 %
Percentage having one or more degrees	26.2	23.1	22.2

HOBBIES

	1946 %	1947 %	1949 %
Active sports (Hunting, fishing)	71.8	62.2	69.8
Handicraft (Woodcraft, carving)	37.8	40.2	46.6
Fine arts (Drawing, piano)	20.5	24.7	29.7
Technical activities (Gardening, photography)	28.2	26.0	24.5
Collecting (Stamps, records)	12.4	14.0	15.6
Games, others than active sports (Chess, bridge)	3.0	1.7	1.7
Fans of arts or sports (Appreciation of art and music)	7.3	1.5	1.0
Intellectual participation (Reading, studying)	10.6	10.0	9.7
Miscellaneous (Travel, experimenting)	6.4	5.6	8.3

Each student indicated two or three hobbies

MANUAL SKILL REQUIRED BY PREVIOUS WORK OR HOBBIES

	1946 %	1947 %	1949 %
Little skill required	9.8	7.1	6.4
Average skill required	44.0	39.5	39.6
More than average skill required	27.3	38.2	38.7
Very highly developed skill required	18.9	15.2	15.2

TIME THAT FRESHMEN INDICATE THEIR DECISION WAS MADE TO ENTER DENTISTRY

	1946 %	1947 %	1949 %
In high school	30.9	32.9	47.5
In college or university	34.5	35.4	32.9
Since college or university	25.2	7.3	2.2
Other	9.4	24.4	17.4
	100.0	100.0	100.0

AMOUNT OF PREDENTAL TRAINING

	1946 %	1947 %	1949 %
2 to 4 years but with no degree	56.8	74.7	65.1
4 years or more, with or without degree	43.2	25.3	34.9
	100.0	100.0	100.0

PREDENTAL GRADE-POINT AVERAGE

Average grade	1946 %	1947 %	1949 %
A	0.1	0.7	1.6
A–	1.8	3.6	5.7
B+	4.6	8.8	16.0
B	13.0	21.4	29.6
B–	25.0	32.1	29.0
C+	29.2	22.9	13.1
C	20.5	8.6	3.9
Below C	5.8	1.9	1.1
	100.0	100.0	100.0
Average G.P.A.	2.46	2.68	2.86

(Class averages are computed with 4.0=A; 3.0=B; 2.0=C; 1.0=D; 0.0=F)

Table • Predental training of dental students

	1946	1947	1948	1949	1950
Total number of freshmen admitted	2,974	3,025	3,072	3,079	
Predental training of the admitted freshmen					
Percentage with up to two years (Minimum of two years required)	0.0	0.0	0.0	0.0	—
Percentage with 2 to 4 years but with no degree	56.8	74.7	77.1	65.1	—
Percentage with 4 years or more, with or without degree	43.2	25.3	22.9	34.9	—
Total number in dental school	8,287	8,871	10,029	11,336	
Predental training of all students in dental schools					
Percentage with 2 years	48.1	47.9	48.9	43.4	
Percentage with 3 years	20.3	21.2	20.8	24.1	
Percentage with 4 years without a degree	4.0	4.7	4.5	5.3	
Percentage with bachelor's or other degree	27.6	26.2	25.8	27.2	
Number of applicants*	—	10,313	—	—	9,811†
Number of applications made*	—	17,671	—	—	18,057†

*Computations for 1947 based on data received from schools after students had been selected and classes started. Computations for 1950 based on data received from schools up to June 15, several months before the beginning of classes. Most of the data, however, were received before May 15, 1950.

†It is estimated that by the close of registration for the 1950 class there will have been more than 11,000 applicants making more than 20,000 applications.

Deaths

Adam, Arthur R., Palmer, Mass.; died August 18; aged 65.

Aiken, Perley B., Jackson, Calif.; College of Dentistry, University of California, 1898; died August 20; aged 79.

Akers, Roscoe C., Indianapolis; Central College of Dentistry, 1900; died August 10; aged 72.

Alderman, Zenas W., Jr., Chevy Chase, Md., Baltimore College of Dental Surgery, 1923; died August 15; aged 52.

Asbury, Claude W., Natoma, Kan.; Kansas City-Western Dental College, 1928; died August 6; aged 52.

Baird, Guy B., San Marino, Calif.; Dental School, Northwestern University, 1901; died August 3; aged 77.

Bergen, Guy L., Frankfort, Ind.; Chicago College of Dental Surgery, 1898; died August 29; aged 75.

Bradford, Gordon H., Covington, Ky.; died July 25; aged 50.

Caddick, George H., Albany, N. Y.; Pennsylvania College of Dental Surgery, 1907; died August 4; aged 70.

Campbell, Rowland H., Rawlins, Wyo.; College of Dentistry, University of Illinois, 1918; died August 10; aged 54.

Chipps, Henry D., Corinth, Miss.; Louisville College of Dentistry of Centre College, 1904; died July 21; aged 67.

Clothier, Charles F., Drexel Hill, Pa.; School of Dentistry, University of Pennsylvania, 1933; died August 6; aged 41.

Cockrum, Amil B., McAllen, Texas; Kansas City-Western Dental College, 1909; died July 11; aged 64.

Cole, Seth E., Washington, D. C.; Dental Department, George Washington University, 1905; died August 8; aged 81.

Collins, T. N., Amarillo, Texas; died August 4; aged 53.

Currie, Albert L., Monona, Iowa; College of Dentistry, University of Iowa, 1891; died July 31; aged 80.

Dailey, Cornelius M.; Steelton, Pa.; School of Dentistry, University of Pittsburgh, 1929; died July 27; aged 48.

Damon, Harry M., Rochester, N. Y.; School of Dentistry, University of Buffalo, 1913; died August 18; aged 62.

Davis, Frederick B., Oakland, Calif.; College of Dentistry, University of California, 1902; died August 12; aged 71.

DeFrance, Lloyd L., Mitchellville, Iowa; College of Dentistry, University of Iowa, 1926; died August 10; aged 53.

Dougherty, Clesson H., Orient, Ohio; College of Dentistry, Ohio State University, 1925; died August 20; aged 52.

Evans, Edward T., Decatur, Ill.; Baltimore College of Dental Surgery, University of Maryland, 1900; died August 26; aged 79.

Farrington, Alvia W., Reed Springs, Mo.; St. Louis Dental College, 1907; died August 17; aged 70.

Fox, Norman B., Hancock, Mich.; Department of Dental Surgery, Detroit College of Medicine, 1897; died August 26; aged 82.

French, Frank R., Bucksport, Me.; died June 13; aged 73.

Frost, Claude J., Warrensburg, Mo.; Marion-Sims Dental College, 1901; died August 19; aged 74.

Garrahan, James E., Hatfield, Pa.; School of Dentistry, University of Pennsylvania, 1922; died August 10; aged 52.

Geffert, Carl S., Chicago; Chicago College of Dental Surgery, 1923; died July 19; aged 52.

Gihon, Harry D., Laurenceville, N. J.; Philadelphia Dental College, 1895; died August 16; aged 77.

Goldman, Nathan L., St. Joseph, Mo.; Kansas City-Western Dental College, 1922; died July 30; aged 50.

Goldstein, Samuel, Buffalo; School of Dentistry, University of Buffalo, 1922; died August 3; aged 51.

Goodman, Irving R., Newark, N. J.; College of Dentistry, New York University, 1936; died June 19; aged 38.

Gradolph, Fred W., West Palm Beach, Fla.; died August 10; aged 86.

Hahn, Jerome E., New York; College of Dental and Oral Surgery, 1921; died August 16.

Hamilton, Curtis B., Cripple Creek, Colo.; College of Dentistry, Creighton University, 1907; died July 23; aged 74.

Hannun, Robert S., Knoxville, Tenn.; Dental Department, Meharry Medical College, 1902; died July 12; aged 48.

Harper, Clifford V., Hot Springs, Ark.; Dental School, Marquette University, 1926; died August 8; aged 46.

Hastings, William C., Newman Grove, Mo.; Keokuk Dental College, 1903; died September 12; aged 74.

Hendricks, Roy H., Norwood, Ohio; Cincinnati College of Dental Surgery, 1906; died August 17; aged 70.

Hinshaw, Everett, Marysville, Kan.; Kansas City Dental College, 1913; died August 16; aged 61.

Hopkins, Lewis W., Kansas City, Kan.; College of Dentistry, University of Illinois, 1904; died September 9; aged 74.

Hussa, Philip, Fort Myers, Fla.; School of Dentistry, Temple University, 1901; died August 6; aged 70.

Jones, Carroll W., Inglewood, Calif.; College of Dentistry, University of Southern California, 1918; died August 8; aged 63.

Kemp, A. C., Calhoun City, Miss.; Atlanta Southern Dental College, 1918; died August 16.

Kenigsberg, Louis, Brooklyn; New York College of Dentistry, 1925; died August 26; aged 49.

Knowles, Calvin W., San Francisco; College of Physicians and Surgeons, 1899; died August 26; aged 72.

Krause, Frederick W., Los Angeles; College of Dentistry, University of Southern California, 1918; died August 4; aged 58.

Krosnick, Alex A., Morrisville, Pa.; School of Dentistry, University of Pittsburgh, 1933; died August 17; aged 42.

Kunz, Charles E., Medford, Ore.; School of Dentistry, North Pacific College of Oregon, 1926; died August 13; aged 55.

Leavitt, Philip A., Boston; Dental School, Harvard University, 1905; died August 3; aged 69.

Leidy, Arthur C., St. Petersburg, Fla.; Atlanta Southern Dental College, 1925; died August 8; aged 59.

Levine, Leo, Brockton, Mass.; Dental School, Tufts College, 1917; died August 17; aged 51.

Lewis, Harry D., Racine, Wis., Dental School, Marquette University, 1917; died August 19; aged 57.

Lewis, Julien, Philadelphia; Philadelphia Dental College, 1908; died June 16; aged 67.

Lill, Adelaide R., Los Angeles; died July 10; aged 80.

Lindenberger, Harvey R., Lawrence, Kan.; Kansas City-Western Dental College, 1926; died August 18; aged 56.

Long, Samuel M., Fernandina, Ga.; Baltimore College of Dental Surgery, University of Maryland, 1909; died August 13.

Loughridge, Jack M., Sacramento, Calif.; College of Dentistry, University of California, 1928; died August 7; aged 44.

Lowrance, Robert L., Dallas, Texas; School of Dentistry, Vanderbilt University, 1898; died July 20; aged 81.

Lyding, Joseph B., Evanston, Ill.; Dental School, Northwestern University, 1908; died August 27; aged 66.

MacDonald, James T., St. Petersburg, Fla.; School of Dentistry, University of Pennsylvania, 1905; died July 10; aged 65.

Malm, Cuthbert A., Sebastopol, Calif.; College of Physicians and Surgeons, 1919; died June 20; aged 54.

Martin, George, Pittsburgh; School of Dentistry, University of Pittsburgh, 1926; died June 25; aged 47.

Mathews, Tyre B., Saluda, S. C.; Southern Dental College, 1903; died July 21; aged 76.

Maytum, Burlington J., Paullina, Iowa; College of Dentistry, University of Iowa, 1897; died August 22; aged 81.

McCormick, Calvin J., Sierra Blanca, Texas; Western Dental College, 1901; died August 20; aged 70.

McDonald, James P., St. Petersburg, Fla., Baltimore College of Dental Surgery, University of Maryland, 1882; died August 10; aged 90.

McFarland, Frank M., Lawrence, Kan., Kansas City Dental College, 1903; died August 19; aged 70.

McVay, Emery, Indianapolis; School of Dentistry, Indiana University, 1928; died August 11; aged 59.

Mead, Charles A., Union City, Pa.; College of Dentistry, University of Iowa, 1896; died August 21; aged 77.

Merritt, Earl, Bristol, Ind.; Dental School, Northwestern University, 1900; died July 7; aged 77.

Michener, Howard P., Chesterhill, Ohio; College of Dentistry, Ohio Medical University, 1904; died August 26; aged 72.

Miller, Otis H., Oakland, Calif.; College of Physicians and Surgeons, 1933; died July 30; aged 39.

Miller, Ralph E., Carrollton, Ohio; School of Dentistry, Western Reserve University, 1903; died August 11; aged 73.

Miyahara, Taiichiro, Honolulu, T. H.; College of Dentistry, University of Southern California, 1923; died August 9; aged 57.

Moore, Harry Z., DeSoto, Kan.; Kansas City Dental College, 1902; died August 19; aged 78.

Mueller, Henry C., Pasadena, Calif.; College of Dentistry, University of Iowa, 1902; died August 24; aged 72.

Nelson, Albert C., Litchfield, Minn.; College of Dentistry, University of Minnesota, 1904; died August 12; aged 74.

Directory

OFFICERS

Harold W. Oppice, President.....1002 West Wilson Ave., Chicago
LeRoy M. Ennis, President-Elect.....4001 Spruce St., Philadelphia
Edward R. White, First Vice-President.....921 Bergen Ave., Jersey City, N.J.
Alfred W. Chandler, Second Vice-President, Museum of Medicine, Navy Dept., Washington, D.C.
M. F. Jarrell, Third Vice-President.....Box 1986, Alexandria, La.
Percy T. Phillips, Speaker, House of Delegates.....18 E. 48th St., New York
Harold Hillenbrand, Secretary.....222 E. Superior St., Chicago
C. Willard Camalier, Assistant Secretary.....1726 Eye St., N.W., Washington, D.C.
H. B. Washburn, Treasurer.....Lowry Medical Arts Bldg., St. Paul

BOARD OF TRUSTEES

W. Earle Craig, 1953, Third District.....8113 Jenkins Arcade, Pittsburgh
L. H. Jacob, 1953, Eighth District.....Jefferson Bldg., Peoria, Ill.
James E. John, Sr., 1953, Fifth District.....Medical Arts Bldg., Roanoke, Va.
Daniel F. Lynch, 1953, Fourth District.....1678 Primrose Road, N.W., Washington, D.C.
Obed H. Moen, 1953, Ninth District.....Watertown, Wis.
J. B. Carr, 1952, Seventh District.....Hume Mansur Bldg., Indianapolis
C. S. Foster, 1952, Tenth District.....Dows Bldg., Cedar Rapids, Iowa
Charles I. Taggart, 1952, First District.....139 Bank St., Burlington, Vt.
Robert P. Thomas, 1952, Sixth District.....Francis Bldg., Louisville, Ky.
William McGill Burns, 1951, Second District.....80 Hanson Place, Brooklyn
R. C. Dalgleish, 1951, Thirteenth District.....State Capitol, Salt Lake City
Willard Ogle, 1951, Twelfth District.....310 N. Ervay St., Dallas, Texas
Fred S. Shandley, 1951, Eleventh District.....Medical & Dental Bldg., Seattle

BUREAUS

Chemistry: J. Roy Doty, Director, 222 E. Superior St., Chicago
Economic Research and Statistics: B. D. Moen, Director, 222 E. Superior St., Chicago
Library and Indexing Service: Donald A. Washburn, Director, 222 E. Superior St., Chicago
Public Information: Herbert B. Bain, Director, 222 E. Superior St., Chicago

COUNCILS

Constitution and Bylaws: Max E. Ernst, Chm., Lowry Medical Arts Bldg., St. Paul
Dental Education: Henry M. Willits, Chm., Roshek Bldg., Dubuque, Iowa
Shailer A. Peterson, Secy., 222 E. Superior St., Chicago
Dental Health: David W. Brock, Chm., 208 Roosevelt Bldg., St. Louis
Allen O. Gruebbel, Secy., 222 E. Superior St., Chicago
Dental Museum and Registry: Henry A. Swanson, Chm., 1726 Eye St., N.W., Washington, D.C.
Dental Research: J. L. T. Appleton, Chm., 4001 Spruce St., Philadelphia
C. B. Hall, Secy., 1835 Eye St., N.W., Washington, D.C.
Dental Therapeutics: Thomas J. Hill, Chm., 2085 Adelbert Road, Cleveland
J. Roy Doty, Secy., 222 E. Superior St., Chicago
Dental Trade and Laboratory Relations: F. W. Herbine, Chm., 230 N. Fifth St., Reading, Pa.
Earl M. Eaton, Secy., American Trust Bldg., Cedar Rapids, Iowa
Federal Government Dental Services: R. H. Friedrich, Chm., 960 Park Ave., Plainfield, N.J.

Hospital Dental Service: Stephen P. Mallett, Chm., 358 Commonwealth Ave., Boston
Insurance: Paul W. Zillmann, Chm., 29 Walden Ave., Buffalo
International Relations: Stanley D. Tylman, Chm., 55 E. Washington St., Chicago
Journalism: Charles A. Wilkie, Chm., 1 Hanson Place, Brooklyn
Judicial Council: Ernest G. Sloman, Chm., 344 14th St., San Francisco
Legislation: E. Harold Gale, Chm., 142 Washington Ave., Albany, N.Y.
Francis J. Garvey, Secy., 222 E. Superior St., Chicago
Membership: H. C. Jarvis, Chm., Mercantile Library Bldg., Cincinnati
National Board of Dental Examiners: Thomas J. Birkbeck, Chm., Milton, Ore.
Gordon L. Teall, Secy., P. O. Box 71, Hiawatha, Kan.
Relief: Leo W. Kremer, Chm., 55 E. Washington St., Chicago
M. C. Hansen, Secy., Racine, Wis.
Scientific Session: William A. Garrett, Chm., Candler Bldg., Atlanta, Ga.
Robert G. Kesel, Secy., 808 S. Wood St., Chicago

ADVISORY COMMITTEES

Bureau of Chemistry: Philip Jay, Chm., 715 S. Forest Ave., Ann Arbor, Mich.
Bureau of Economic Research and Statistics: L. M. FitzGerald, Chm., Roshek Bldg., Dubuque, Iowa
Bureau of Library and Indexing Service: John E. Gurley, Chm., 350 Post St., San Francisco
Bureau of Public Information: C. H. Jamieson, Chm., David Whitney Bldg., Detroit

SECTION CHAIRMEN

Clinics: Marcus H. Burton, 1149 16th St., N.E., Washington, D.C.
Full Denture Prosthesis: Jack Werner, College of Physicians and Surgeons Dental School, San Francisco
Operative Dentistry: Rex Ingraham, 122 E. Sixteenth St., Los Angeles
Oral Surgery: James R. Cameron, 269 S. Nineteenth St., Philadelphia 3
Orthodontics: J. William Adams, 1121 W. Michigan St., Indianapolis
Partial Denture Prosthesis: Paul A. Edmand, 55 E. Washington St., Chicago
Pedodontics and Oral Hygiene: George W. Teuscher, 311 E. Chicago Ave., Chicago 11
Periodontia: Roy O. Elam, 605 Medical Arts Bldg., Nashville, Tenn.
Practice Management: Cecil H. Bliss, 503 Fifth St., Sioux City, Iowa
Research: Helmut Zander, Tufts College Dental School, 416 Huntington Ave., Boston
Roentgenology: L. R. Main, School of Dentistry, University of St. Louis, St. Louis
Scientific Exhibits: J. M. Wisan, Veterans Administration Hospital, Brooklyn

THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION
222 East Superior Street, Chicago 11, Illinois
WHitehall 4-6730

LON W. MORREY, *Editor* JOHN J. HOLLISTER, *Business Manager*

All expressions of opinions and all statements of supposed facts are published on the authority of the writer over whose signature they appear, and are not to be regarded as expressing the views of the American Dental Association, unless such statements or opinions have been adopted by the Association. *Articles* are accepted with the understanding that they have not been published previously and that they are submitted solely to THE JOURNAL. *Advertising copy* must conform to the official standards established by the American Dental Association. *Notice of change of address* should be received one month before the change is to be effective. *Orders for reprints of* JOURNAL articles must be received by the Business Manager's office not later than the 15th of the month of issue in order to secure advantage of the lowest possible prices. Orders received after this date are subject to special quotation.

Announcements

AMERICAN DENTAL ASSOCIATION

Ninety-Second Annual Session	Oct. 15-18, 1951	Washington, D. C.
Ninety-Third Annual Session	Sept. 8-11, 1952	St. Louis
Ninety-Fourth Annual Session	Sept. 28-Oct. 1, 1953	Cleveland

MEETINGS OF STATE SOCIETIES

State	Date	Place	Secretary	Address
Alabama	April 16-18, 1951	Birmingham	G. W. Matthews	1922 Tenth Ave., S., Birmingham 5
Alaska			C. N. Hoveland	Anchorage
Arizona	April, 1951	Tucson	H. G. DeWolf	Valley National Bank Bldg., Tucson
Arkansas		Little Rock	D. M. Hamm	White Bldg., Clarksville
California	April 16-18, 1951	San Francisco	L. R. Ludwigsen	450 Sutter St., San Francisco
S. California	April 2-4, 1951	Los Angeles	C. A. Moss	1401 S. Hope St., Los Angeles
Colorado			R. A. Downs	724 Republic Bldg., Denver 2
Connecticut			E. S. Arnold	37 Linnard Rd., W. Hartford
Delaware	Jan. 10, 1951	Wilmington	L. Kreshtool	815 West St., Wilmington
District of Columbia	Mar. 11-14, 1951	Washington	K. H. Wood	202-1835 Eye St., N. W., Washington
Florida			L. M. Schulstad	Professional Bldg., Bradenton
Georgia			J. M. Heard, Jr.	Persons Bldg., Macon
Hawaii			J. H. Dawe	810 N. Vineyard St., Honolulu 17
Idaho		Lewiston	A. R. Cutler	Eastman Bldg., Boise
Illinois	May 7-10, 1951	Peoria	P. W. Clopper	623 Jefferson Bldg., Peoria 2
Indiana	May 21-23, 1951	Indianapolis	E. E. Ewbank	Kingman
Iowa	May 7-9, 1951	Des Moines	H. I. Wilson	639 Insurance Exchange Bldg., Des Moines
Kansas	May 6-9, 1951	Wichita	F. A. Richmond	Brotherhood Bldg., Kansas City
Kentucky	April 2-4, 1951	Louisville	A. B. Coxwell	1976 Douglass Blvd., Louisville
Louisiana	April 26-28, 1951	New Orleans	J. S. Bernhard	407 Medical Arts Bldg., Shreveport
Maine	June 28-30, 1951	Rockland	F. P. Gilley	31 Central St., Bangor
Maryland	May 7-9, 1951	Baltimore	E. L. Pensagno, Jr.	415 Medical Arts Bldg., Baltimore 1
Massachusetts	April 30-May 2, 1951	Boston	H. E. Tingley	12 Bay State Road, Boston
Michigan	April 16-18, 1951	Detroit	F. Wertheimer	Michigan Dept. of Health, Lansing
Minnesota	Feb. 19-21, 1951	Minneapolis	C. V. E. Cassel	242 Lowry Medical Arts Bldg., St. Paul
Mississippi	April 29-May 2, 1951	Jackson	H. M. Campbell	Tupelo
Missouri	April 1-4, 1951	St. Louis	R. R. Rhoades	201 Merchants Bank Bldg., Jefferson City
Montana	May 3-5, 1951	Billings	C. S. Renouard	304 Phoenix Bldg., Butte
Nebraska	May 14-16, 1951	Lincoln	F. A. Pierson	Federal Security Bldg., Lincoln
Nevada	June 1, 2, 1951	Reno	W. R. Bell	Medical Arts Bldg., Reno
New Hampshire			F. E. Williams	814 Elm St., Manchester
New Jersey	April 11-13, 1951	Atlantic City	J. G. Carr	407 Cooper St., Camden
New Mexico	May 21-23, 1951	Santa Fe	J. S. Ellar	First National Bank Bldg., Albuquerque
New York	May 7-11, 1951	Buffalo	C. A. Wilkie	1 Hanson Place, Brooklyn
North Carolina	April 30-May 2, 1951	Pinehurst	B. N. Walker	Liberty Life Bldg., Charlotte
North Dakota	May 17-20, 1951	Grand Forks	J. H. Lunday	Fargo
Ohio			E. G. Jones	185 E. State St., Columbus
Oklahoma	April 15-18, 1951	Oklahoma City	R. C. Calkin	109½ W. Oklahoma, Guthrie
Oregon	Mar. 3-5, 1951	Portland	H. C. Fixott, Jr.	Medical-Dental Bldg., Portland
Panama Canal Zone			L. F. Baranowski	P. O. Box 102, Ft. Kobbe
Pennsylvania	Sept. 11-14, 1951	Pittsburgh	M. D. Zimmerman	217 State St., Harrisburg
Puerto Rico			J. F. Suarez	Box 3863, Santurce
Rhode Island	Jan. 1951	Providence	A. F. Sullivan	171 Westminster St., Providence 3
South Carolina	May 6-8, 1951	Charleston	J. R. Owings	201 E. North St., Greenville

State	Date	Place	Secretary	Address
South Dakota	May 20-22, 1951	Watertown	E. W. Elmen	Sioux Falls
Tennessee	May 7-9, 1951	Nashville	E. J. Justis	Exchange Bldg., Memphis
Texas	April 30-May 3, 1951	San Antonio	W. Ogle	310 N. Ervay St., Dallas
Utah		Ogden	B. P. McBride	Medical Arts Bldg., Salt Lake City
Vermont	May 20-22, 1951	Woodstock	J. A. Larrow	Middlebury
Virginia	April 9-11, 1951	Richmond	J. E. John	804 Medical Arts Bldg., Roanoke
Washington			C. E. Flood	1130 Medical-Dental Bldg., Seattle 1
West Virginia	June 16-18, 1951	White Sulphur Springs	A. B. Drake	1202 West Virginia Bldg., Huntington
Wisconsin	Mar. 27-29, 1951	Milwaukee	R. A. Mason	964 N. 27th St., Milwaukee
Wyoming			T. J. Drew	State Capitol, Cheyenne

MEETINGS OF STATE BOARDS OF DENTAL EXAMINERS

State	Date	Place	Secretary	Address
Alabama	June 18, 1951	Birmingham	M. D. Edwards	120 Adams, Montgomery
Alaska	Aug. 6-11, 1951	Ketchikan	J. H. Geyer	Juneau
Arizona			R. K. Trueblood	25 N. Second Ave., Glendale
Arkansas			H. E. Hanna	Wilson Bldg., El Dorado
California	Feb. 5, 1951	San Francisco	K. I. Nesbitt	507 Polk St., San Francisco 2
Colorado			W. D. McCarthy	724 Republic Bldg., Denver 2
Connecticut			C. G. Brooks Recorder	302 State St., New London
Delaware			P. K. Musselman	143 W. Main St., Newark
District of Columbia	Jan. 8-12, 1951	Washington	W. M. Falls	1801 Eye St., N. W., Washington 6
Florida	July 9-14, 1951*		A. W. Kellner	P. O. Box 155, Hollywood
Georgia			R. C. Coleman	State Capitol Bldg., Atlanta 3
Hawaii			H. L. Houvener	7-8 Pantheon Bldg., Honolulu
Idaho			F. L. Luce	510 First National Bank Bldg., Boise
Illinois			W. A. McKee	503 Wood Bldg., Benton
Indiana			C. A. Frech	Gary National Bank Bldg., Gary
Iowa	Dec. 4-8*	Iowa City	H. M. Willits	719 Roshek Bldg., Dubuque
Kansas			G. L. Teall	Hiawatha
Kentucky			R. I. Todd	Western Union Bldg., Richmond
Louisiana			A. R. deNux	Marksville
Maine			R. A. Derbyshire	Box 387, Skowhegan
Maryland			W. D. Day	3811 Hadley Square E., Baltimore 18
Massachusetts			J. C. Wilson	413 N. State House, Boston 33
Michigan	Jan. 28-Feb. 2, 1951	Ann Arbor	J. L. Champagne	3714 W. McNichols Road, Detroit 21
Minnesota	Jan. 8-12, 1951	Minneapolis	F. A. Larson	1632 Washington St., N. E., Minneapolis
Mississippi	Jan. 8-10, 1951	Jackson	J. C. Boswell	508 Lamar Bldg., Jackson
Missouri			R. R. Rhoades	Central Trust Bldg., Jefferson City
Montana			P. M. Feda	Box 865, Helena
Nebraska			C. A. Bumstead	924 Stewart Bldg., Lincoln
Nevada	Dec. 4	Reno	G. C. Steinmiller	Masonic Temple, Reno
New Hampshire	June, 1951	Boston	J. B. Brown	5 N. State St., Concord
New Jersey	Dec. 11-15††	Philadelphia	W. A. Wilson	150 E. State St., Trenton 8
	Dec. 11-15**	Trenton		
	Dec. 11, 12‡	Philadelphia		
New Mexico	Jan. 15-18, 1951	Santa Fe	J. J. Clarke, Sr.	Artesia
New York			D. W. Beier	23 S. Pearl St., Albany 7
North Carolina	June 25, 1951	Raleigh	F. O. Alford	1109 Liberty Life Bldg., Charlotte 2
North Dakota	July 9-12, 1951	Fargo	A. B. Crabtree	Ellendale
Ohio			E. D. Lowry	79 E. State St., Columbus
Oklahoma			N. D. Griffith	509 Medical Arts Bldg., Oklahoma City 2
Oregon			A. F. Davis Exec. Secy.	306 Public Service Bldg., Portland
Pennsylvania	Dec. 4-8†	Philadelphia	R. E. V. Miller	Northampton National Bank Bldg., Easton
Rhode Island	Dec. 4-7‡		F. M. Hackett	State Office Bldg., Providence
South Carolina	July 4-7, 1951	Columbia	E. G. Bumgardner	1517 Hampton St., Columbia
South Dakota			R. W. Ellis	Salem

State	Date	Place	Secretary	Address
Tennessee	Dec. 11-15	Memphis	F. S. Maxey	804 Bennie Dillon Bldg., Nashville 3
Texas			R. T. Weber	312 Capital National Bank Bldg., Austin
Utah			J. J. Dalpiaz	Helper
Vermont			F. A. Reid	Windsor
Virginia	June 12, 1951	Richmond	J. M. Hughes	715 Medical Arts Bldg., Richmond 19
Washington	Dec. 18-22	Seattle	J. B. Kiefer, Jr.	510 Cobb Bldg., Seattle
West Virginia	June 25-27, 1951	West Liberty	C. A. Laughlin	613 Prunty Bldg., Clarksburg
Wisconsin			S. F. Donovan	Tomah
Wyoming			W. J. Ryan	208 Boyd Bldg., Cheyenne

•Dentistry and dental hygiene.
†Dentistry
‡Dental hygiene.

••Written examinations.
††Clinical examinations.

OTHER MEETINGS

Name	Date	City	Secy. or Chm.	Address
Academy of Denture Prosthetics, Annual Meeting	April 30-May 6, 1951	Washington, D. C.	I. L. Furnas Secy.	928 Silverado St., La Jolla, Calif.
American Academy of Dental Medicine	Dec. 3	New York	W. M. Greenhut Secy.	124 E. 84th St., New York 28
American Association of Endodontists, Annual Meeting	Feb. 3, 4, 1951	Chicago	N. W. Burkman Secy.	525 Merrill St., Birmingham, Mich.
American Association of Orthodontists, Annual Meeting	April 23-26, 1951	Louisville, Ky.	G. R. Moore Secy.	919 Oakland Ave., Ann Arbor, Mich.
American Board of Pedodontics	Feb. 8-10, 1951	St. Louis	R. L. Ireland Secy.	305 Andrews Hall, Lincoln 8, Neb.
Chicago Dental Society, Midwinter Meeting	Feb. 5-8, 1951	Chicago	K. S. Richardson Exec. Secy.	30 N. Michigan Ave., Chicago 2
Denver Dental Association, Midwinter Meeting	Jan. 7-10, 1951	Denver	R. R. Maier Secy.	1123 Republic Bldg., Denver 2
Greater New York Dental Meeting	Dec. 4-8	New York	Stanley G. Standard Gen. Chm.	Room 106A, Hotel Statler, New York 1
Greater Philadelphia, Annual Meeting	Jan. 30-Feb. 1, 1951	Philadelphia	R. Adams Secy.	710 W. York St., Philadelphia
International Academy of Anesthesiology	Jan. 17, 1951	New York	I. G. Tomack Secy.	355 E. 149th St., New York 55
Pacific Coast Dental Conference (Eighth)	June 25-28, 1951	Seattle	C. R. Flood Secy.	605 Medical-Dental Bldg., Seattle 1
Pan American Odontological Association, Fourteenth Annual Dinner-Meeting	Dec. 6	New York	R. H. Brodsky Exec. Secy.	14 East 81st St., New York
Southeastern Society of Oral Surgeons, Second Annual Meeting	Mar. 2, 3, 1951	New Orleans	G. W. Matthews Editor	1922 Tenth Ave., S., Birmingham, Ala.
Southern Academy of Oral Surgery, First Annual Convention	April, 1951	Savannah, Ga.	R. H. Roux, Jr. Secy.	112 W. Jones St., Savannah, Ga.

EVERYBODY SMILE

- A new dental health education booklet.
- Designed for supplementary classroom reading in the upper grades. Also suitable for the dental office reception room.
- Illustrated in four colors. Size about 7 by 9 inches. 36 pages.

EXPERT OPINIONS

"This new booklet, *Everybody Smile*, is the finest piece of health education material I have ever seen, and I mean in all fields of health." Hugo M. Kulstad, D.D.S., Chief, Bureau of Dental Health, California Department of Public Health

"Your new booklet, *Everybody Smile*, is an excellent piece of work. Its colorful art work and text capture the juvenile spirit and attention. I am making such material available to my young patients." Leo J. Shoeny, D.D.S., Chairman, Council on Dental Health, American Dental Association

"It is an attractive and appealing publication and should, I am certain, prove most helpful." Herold C. Hunt, Ed.D., General Superintendent of Schools, Chicago Board of Education

— PRICES —

25 copies	$ 6.50
50 copies	11.40
100 copies	19.50

AMERICAN DENTAL ASSOCIATION
222 E. SUPERIOR ST. · CHICAGO 11, ILL.

FOR *Best Esthetics*

SPECIFY THIS COMBINATION

FOR ALL YOUR METAL RESTORATIONS

Steele's

FLATBACK

FACINGS - In New Hue Shades

Steele's New Hue FLATBACK facings are designed specifically as bridge teeth. They harmonize perfectly with adjacent natural teeth—even to that lifelike sparkle. Restorations made with these facings provide not only superior esthetics, but maximum serviceability as well.

+

Steele's

GŌL-FĀC BACKINGS

Steele's GOL-FAC backings are standard P.G. backings with a thin layer of gold on the face. The gold color preserves the original shades of the New Hue teeth. For best esthetics Steele's GOL-FAC backings should always be used with Steele's New Hue teeth.

NOTE: When the casting technic is used, Steele's GOL-FAC backings (like all Steele's backings) require the use of a ***protective*** type of investment, such as Super Investment—made by Ransom & Randolph.

THE COLUMBUS DENTAL MANUFACTURING CO.
COLUMBUS 6, OHIO

Christmas List

This Christmas . . . give your colleagues in dentistry a Mosby Dental Book. Books have enduring value — and are appreciated probably more than any other way you may choose to remember a friend or associate.

Check the list of new outstanding Dental Books below, then send us your Christmas book-gift list. We will enclose a handsome greeting card and ship direct to any place you indicate.

★**ORAL PATHOLOGY** — A Histological, Roentgenological, and Clinical Study of the Diseases of the Teeth, Jaws and Mouth. By KURT H. THOMA, D.M.D., THIRD EDITION. 1559 pages, 1660 illustrations, (78 in Color). PRICE, $17.50 (1950).

★**ORAL SURGERY**—By KURT H. THOMA, D.M.D., IN TWO VOLUMES. 1521 pages, 1631 illustrations (121 in Color). PRICE, $30.00 (1948).

★**PERIODONTIA**—A Study of the Histology, Physiology, and Pathology of the Periodontium, and the Treatment of Its Diseases. By HENRY M. GOLDMAN, D.M.D., SECOND EDITION. 661 pages, 488 illustrations, (18 in Color). PRICE, $12.50 (1949).

★**ENDODONTIA** — By BERNHARD GOTTLIEB, M.D., D.M.D., and SETH LEE BARRON, D.D.S., and J. HOBSON CROOK, D.D.S., 177 pages, 103 illustrations. PRICE, $6.00 (1949).

★**THE EFFICIENT DENTAL ASSISTANT** —By ETHEL COVINGTON, D.H., SECOND EDITION. 285 pages. PRICE, $3.50 (1948).

★**ORAL HISTOLOGY AND EMBRYOLOGY**—Edited by BALINT ORBAN, M.D., D.D.S., SECOND EDITION. 350 pages, 265 illustrations (4 in Color). PRICE, $8.00 (1949).

★**ORAL ANATOMY**—By HARRY SICHER, M.D., 570 pages, 310 illustrations, (24 in Color). PRICE, $15.00 (1949).

★**REVIEW OF DENTISTRY** — By JAMES T. GINN, B.S., D.D.S. 824 pages. PRICE, $5.75 (1949).

★**Principles and Technics for COMPLETE DENTURE CONSTRUCTION** — By VICTOR H. SEARS, D.D.S., 416 pages, illustrated. PRICE $5.00 (1949).

★**COMPLETE DENTURES**—By MERRILL G. SWENSON, D.D.S., F.I.C.D., F.A.C.P. 726 pages, 882 illustrations, (10 in Color). PRICE, $12.50 (1947).

★**PRACTICAL ORTHODONTICS** — (Original Text by the Late Martin Dewey). By GEORGE M. ANDERSON, D.D.S. SEVENTH EDITION. 556 pages, 640 illustrations. PRICE, $10.00 (1948).

★**BIOCHEMISTRY OF THE TEETH**—By HENRY M. LEICESTER, Ph.D., 306 pages, illustrated. PRICE, $5.00 (1949).

★**DENTAL ANATOMY** — By ROBERT C. ZEISZ, D.D.S., F.A.C.D., F.I.C.S., and JAMES NUCKOLLS, D.D.S., F.A.C.D., 486 pages, 427 illustrations. Size: 8½ x 11 in. PRICE, $14.00 (1949).

★**RESTORATIVE DENTISTRY** — By JEROME M. SCHWEITZER, B.S., D.D.S., 511 pages, 1014 illustrations. PRICE, $15.00 (1947).

★**Theory and Practice of CROWN AND BRIDGE PROSTHESIS** — By STANLEY D. TYLMAN, A.B., D.D.S., M.S., F.A.C.D. SECOND EDITION. 960 pages, 1273 illustrations, (9 in Color). Price, $12.50 (1947).

★**An Introduction to the HISTORY OF DENTISTRY** — By BERNHARD WOLF WEINBERGER, D.D.S., IN TWO VOLUMES. 1008 pages, 313 illustrations. PRICE, $20.00 (1948).

Your Christmas Packages will receive prompt attention from the Mail Department

The C. V. MOSBY Company

Scientific Publications

3207 Washington Blvd. **St. Louis 3, Missouri**

Sensational!

NEW TI-LECTRO POLISHER

● Wherever it has been shown, the new TI-LECTRO Polisher has created a sensation. At dental shows it was a hit — in private showings it had doctors enthusiastic — in dental offices patients hailed the new brilliance!

TICONIUM presented TI-LECTRO to its laboratories exclusively. Here's new, magic brilliance for Ticonium cases. A few of the features are:

new brilliance

increased eye appeal

full tissue detail in "high key"

holds lustre longer

● TI-LECTRO polishing is TICONIUM's answer to modern dental needs. Ask your local TICONIUM Laboratory about TI-LECTRO!

another FIRST by .... **Ticonium**

413 NORTH PEARL ST., ALBANY 1, N. Y.

CLIP & RETURN

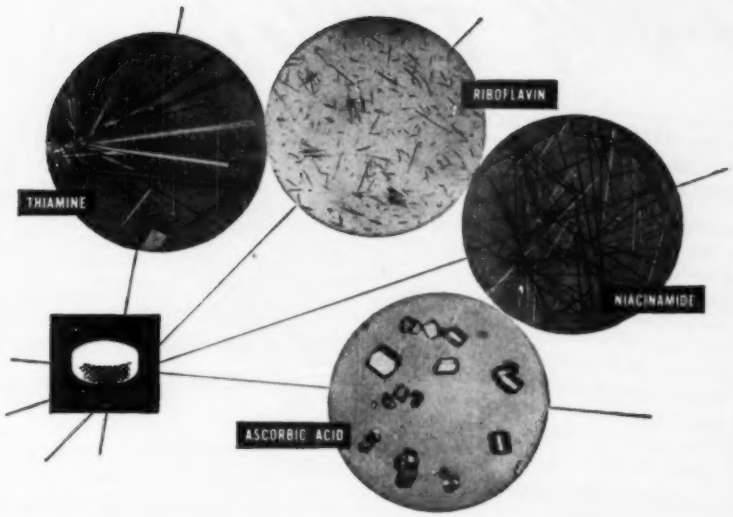
TICONIUM • 413 N. Pearl Street • Albany 1, New York

I WANT TO TRY A TI-LECTRO CASE. PLEASE HAVE YOUR NEAREST LABORATORY CALL ON ME.

NAME .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....



Basic therapy for healthy oral mucosa

Four vitamins are essential for the integrity of buccal mucosa. Three of them—thiamine, riboflavin and niacinamide—are members of the B complex; these, together with Vitamin C, are referred to as the "critical water soluble vitamins".

When nutritional deficiencies are reflected in oral lesions Basic Formula Vitamin Tablets Squibb provide:

CORRECTION—of the deficiencies often associated with changes giving rise to gingivitis

PROTECTION—when given prophylactically, or as an adjuvant to chemotherapy or antibiotic therapy of oral infections

CLINICALLY PROVED, truly therapeutic dosages of:

Dosage: one or more Tablets daily	Thiamine Hydrochloride	10 mg.
	Riboflavin	5 mg.
Bottles of 30, 100, 250 and 1,000	Niacinamide	150 mg.
	Ascorbic Acid	150 mg.

American Dental Association
RELIEF FUND

BASIC FORMULA
VITAMIN TABLETS

SQUIBB

Safety First!

NOW, REMOTE CONTROL GAS HEATERS ASSURE CLEAR SWITCHES FOR SAFE OPERATION OF TRAINS . . .

Latest safety development in railroading is the remote-control gas heater on switches to make sure that ice and snow don't lock the switch in one position. No longer is this vital accident protection left to a bundled up trainman with a lighted torch. Now... a dispatcher from a control point many miles away starts the heaters by turning a control switch.

IN A LOCAL ANESTHETIC, TOO . . .

Safety Is the first consideration!

THE SAFETY of each tube of Monocaine Local Anesthetic is assured, not by remote control, but by meticulous care in preparation.

YES . . . WHEN YOU INJECT an anesthetic solution to bring your patients blessed relief from pain, you want to be sure that you are protecting the health — and very life of the patient — by using a *safe* local anesthetic! Monocaine solution 2ME produces anesthesia as deep as procaine 4%, yet its toxicity is appreciably less than that concentration of procaine.

MONOCAINE FORMULA 2ME
THE "SAFETY FIRST" LOCAL ANESTHETIC

MONOCAINE Formula 2ME was specifically developed for those cases in which anesthesia is difficult to obtain. While Monocaine 1½% is recommended for routine use, Monocaine Formula 2ME will be found to be particularly advantageous for jacket crown work, pulp extirpation and the preparation of bridge abutments.

Accepted
COUNCIL on DENTAL THERAPEUTICS
AMERICAN DENTAL ASSOCIATION

NOVOCOL CHEMICAL MFG. CO., INC.
291-23 Atlantic Ave. Brooklyn 7, N.Y.
Toronto • London • Buenos Aires • Rio de Janeiro

Monocaine is the registered trade mark of the Novocol Chemical Mfg. Co., Inc.

strength Durallium's great strength permits thin restorations that give greater tongue room. Since there is less material in the mouth, the restoration feels natural and lacks that bulky feeling.

adaptation Durallium's perfect adaptation and complete toleration by tissues further adds to patient comfort.

satisfaction You prescribe lasting comfort and satisfaction for your patients when you prescribe a Durallium restoration.

Write for details on Durallium...or ask your Durallium laboratory.

durallium

products corp.

809 W. WASHINGTON BLVD.
CHICAGO 7, ILLINOIS

"This is the first time I ever liked listening to Crosby!" says HOPE

HOPE:
I've always stuck cotton in my ears when the Old Groaner opened his mouth. But now he sounds good. Let's listen!

CROSBY:
Ladies and gentlemen, this isn't a song. It's just a suggestion. This year, let's *all* give U. S. Savings Bonds for Christmas presents. They make wonderful gifts. Tell 'em about those bonds, Chisel Nose.

HOPE:
Gladly. It's all very simple—even Crosby understands how they work. In just ten years, they pay $4 for every $3 they cost. And they're appropriate for *everybody* on your Christmas list. Am I right, Bing?

CROSBY:
For once in his life the old Scene-Stealer *is* right. But seriously, folks, nothing makes a more welcome, more sensible present than U. S. Savings Bonds. So—

HOPE:
So why not give the very finest gift in America—U. S. Savings Bonds!

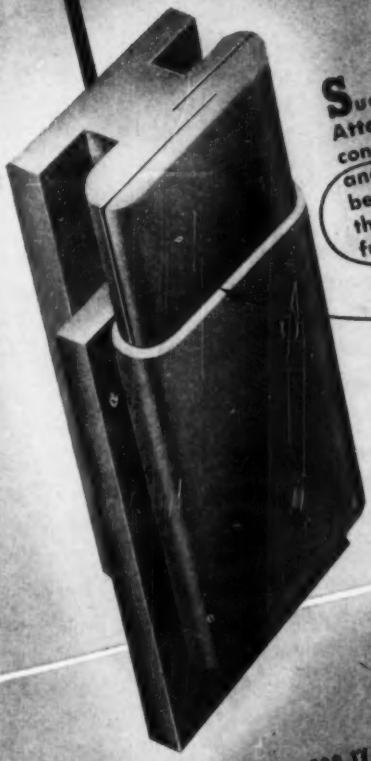
Give the finest gift of all... U.S. Savings Bonds

Contributed by this magazine in co-operation with the Magazine Publishers of America as a public service.

STERN

Rugged PRECISION ATTACHMENTS

with a wealth of reserve strength



Success of the Stern Precision Attachment is due to its rugged construction . . . reserve strength . . . and uniform and complete contact between all bearing surfaces . . . thus assuring maximum retention in function.

Carry the tested and proved efficiency of fixed bridgework principles into your removable restorations by using Stern Precision Attachments.

Write for further information.

STERN GOLDS

I. STERN & CO., Inc. 320 WASHINGTON ST. [illegible]

MANUFACTURERS OF FINE DENTAL GOLDS FOR OVER 50 YEARS

The real *Key* to the problem of tooth decay

Recently completed clinical data again confirm the fact that the most important function in the prevention of tooth decay is regular cleansing of the teeth after eating plus regular biannual visits to the dentist.* In order to get your patients to cooperate with this most important function, it is necessary to have them use a tooth paste to their liking; one that tastes good, cleans efficiently and leaves the mouth feeling cool and refreshed. Kolynos Tooth Paste meets these specifications to the letter. When you recommend Kolynos Tooth Paste to your patients, you may be assured that you will invite their cooperation in the consistent and regular function of brushing their teeth after eating and will thus help to prevent tooth decay. For years Kolynos has been the choice of many discriminating dentists throughout the world. Won't you make it your choice too?

* Fosdick, L. S., The Reduction of the Incidence of Dental Caries. I. Immediate Tooth Brushing with a Neutral Dentifrice, J.A.D.A. Vol. 40, No. 2, February 1950.

KOLYNOS TOOTH PASTE

WHITEHALL PHARMACAL COMPANY • 22 East 40th Street, New York 16, N. Y.

REST WHILE YOU WORK TO HAVE FUN WHILE YOU PLAY —WITH ROTA-SEAT

Rota-Seat gives you complete operating freedom —SITTING DOWN. It will add years, profitable years, to your professional career, because when you work sitting down you banish exhaustion, backache, bending and twisting stresses that can build up to serious organic disorders. You can take care of more patients, too, for you will need fewer rest periods.

Rota-Seat is the ORIGINAL operating seat for dentists (not merely a rest stool), you sit on deep, foam rubber, and roll easily to any operating position. More and more dental colleges are endorsing Rota-Seat's "sit-down" technique every day—send for fully illustrated booklet showing how to combat fatigue and live longer—the energy-saving, Rota-Seat way.

Ask your dental supply dealer to show you how easy it is to operate from a Rota-Seat in *your own* office. Thousands of satisfied users.

EXTRA COMFORT FOR YOUR PATIENTS, TOO . . . .

Instead of the patient holding his head in one position, forcing you to operate from many different, uncomfortable angles, the new Rota-Seat Head Rest permits turning the patient's head to offer easier access for the dentist, thus proving more comfortable for patient and dentist alike. The Rota-Seat Head Rest is adjustable to fit *any* type or make of chair. Made in one piece, large enough to accommodate any size head, of 1¼ in. thick foam rubber, covered with black vinylite to resist acids, water, oil, and all solvents, it can easily be kept clean by ordinary washing. Ask your dental supply dealer for details, or write us direct, giving your dealer's name.

rota-seat INC.

DENTAL EQUIPMENT SPECIALISTS
4606 W. 21st St. Cicero 50, Ill.

5,143 IMPRESSIONS A DAY*

are taken with . . .

D-P ELASTIC IMPRESSION CREAM

for Partial, Bridge and Indirect Inlay Impressions

Here are the reasons for such wide use . . .

SMOOTH, CREAMY TEXTURE of the material produces *very* smooth surface on each impression.

HARD, DENSE, SMOOTH CASTS are obtained *without* fixing solution or potassium sulphate tablets.

IMMEDIATE POURING of casts after removal of the impression may be done.

SUPREME ACCURACY is pre-tested before each batch of material is packaged.

BALANCED FORMULA *eliminates* fear of deterioration.

UNIFORM RESULTS are assured with each case.

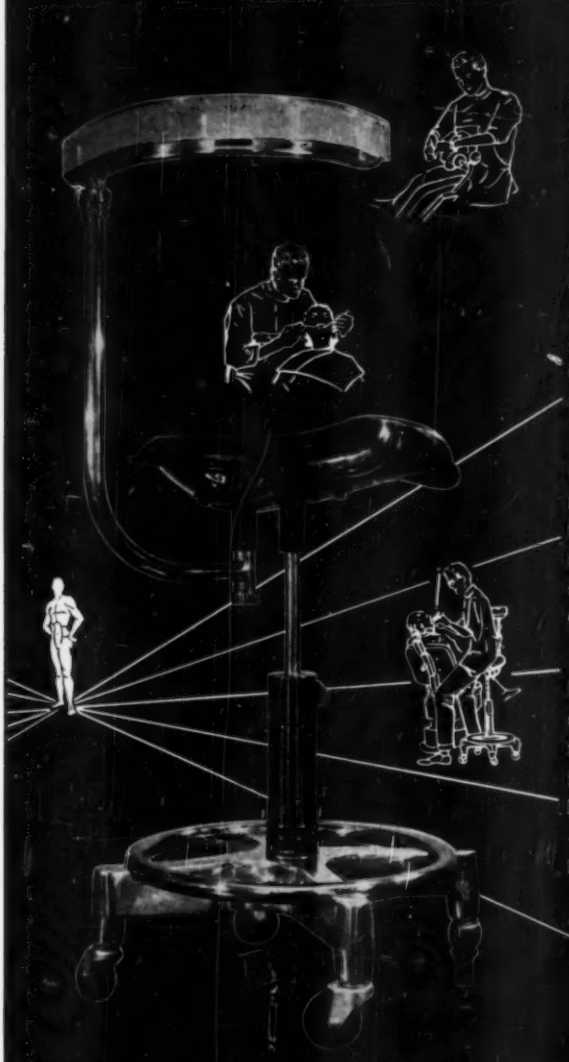
***CHECK OUR FIGURES—**
We divided a total of 9,000,000 impressions made with this material (a conservative figure) by seven years (the period covered), then divided the yearly figure by 250 working days.

Order from your Dental Dealer NOW

DENTAL PERFECTION CO.

543 West Arden Ave., Glendale 3, Calif.

The Modern, Pleasant Way to Practice Dentistry



The new trend is toward operating in the seated position. Schools and authorities of the profession are advocating this modern way to operate.

Certainly — the dentist should take advantage of every opportunity to make his work more enjoyable. Now . . . all the objections and limitations that were involved in operating in the seated position are eliminated.

The Posture Comfort Chair is the direct result of constant effort to provide the dentist with a chair that is ADAPTABLE. More and more dentists are proving to themselves that the Posture Comfort Chair is the answer.

The arcuate body support relieves the back. The form fitting saddle seat affords complete comfort. The foot rest and multiple adjustments combine to make the Posture Comfort Chair functional — a "custom built" chair that is the best money can buy.

Childs Manufacturing Company
Macon, Georgia

366 pages of indexed articles from 144 dental journals

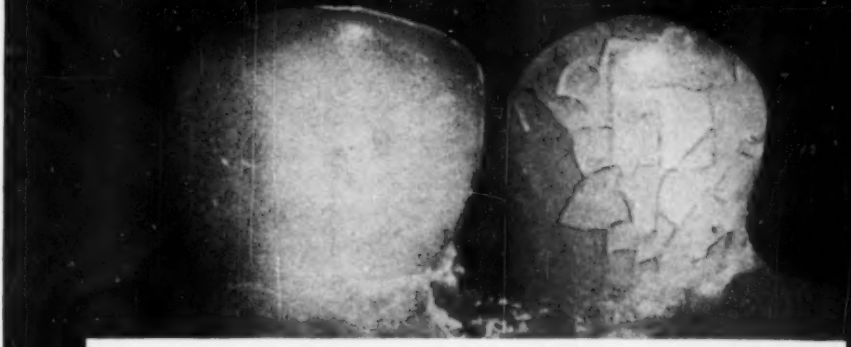
Looking for a particular dental article? Or a number of references on dental subjects? You'll find them quickly and easily in this complete, comprehensive Index. It lists thousands of articles from all of the important journals published in the English language from 1945 through 1947. Australia, Canada, England, India, New Zealand, South Africa and the United States are covered. Authors and Subjects are given and cross-indexed for convenience. In addition, you'll find lists of dental texts and journals. Original articles, editorials, abstracts, papers discussed before Societies . . . *all* are here. Don't waste time looking for the proverbial needle in a haystack. Order your copy of this valuable Index. Only a limited edition was printed—so to make sure you get a copy, write today.

A valuable reference for Dentists, Dental Manufacturers, Pharmaceutical Manufacturers, and Libraries.

Only $10. *Order your copy today!*

American Dental Association, 222 East Superior Street, Chicago 11, Illinois

There is only one Real Non-Craze Plastic Tooth . . . DURA-BLEND



All methyl methacrylate teeth known to us will craze (above right) with repeated dippings in alcoholic beverages or common solvents*, after processing.

Such crazing accelerates wear, and stain absorption in the mouth. It is a major contributory cause of plastic tooth breakdown.

DURA-BLEND plastic teeth (left above) with their high safety factor are so resistant to crazing that out of millions of teeth and nearly two years of use, *not a single case has been reported.*

DURA-BLENDS will resist heats that puff other teeth into a sponge-like distortion.

Send for scientific booklet on testing plastic teeth

MYERSON'S

Dura-Blend

PLASTIC TEETH

MYERSON TOOTH CORPORATION, CAMBRIDGE 39, MASS

*i.e. carbon tetrachloride, acetone and monomers

Above teeth, processed together, have been equally exposed to dipping in bonded bourbon whiskey

BACK AGAIN!
COOK-WAITE
Laboratories, Inc.
1450 Broadway, New York 18, N. Y.

"Sure-our dentist doesn't hurt!"

Of course our friends are back again — back for another appointment. That they have returned is convincing proof of their confidence in their dentist.

Such confidence is easily won with Novocain-Pontocaine-Cobefrin. Of course, elimination of dental pain by *any* means is well worth while . . . but what simpler, more economical way than by use of this fine local anesthetic solution? Used where indicated, "N.P.C." creates the sort of deep, dense, lasting anesthesia which brings maximum protection to your patients, maximum satisfaction to you.

ORDER **npc** TODAY

"the Difference is Distinctive"

A copy of THE INSTANT MOLD SELECTOR for Micromcld® Teeth is Waiting for You

THE FIRST IMPROVEMENT IN MOLD SELECTION IN 50 YEARS

IT SAVES YOU CHAIRTIME . . .

ELIMINATES HIT AND MISS METHODS OF MOLD SELECTION . . .

SIMPLE TO OPERATE . . .

SIMPLIFIES CORRECT DIMENSIONAL SELECTION

YOU CAN SELECT THE PROPER MOLDS FOR A PATIENT IN 3 MINUTES OR LESS

HERE IS ALL YOU DO TO SELECT MOLDS AND SIZES:

TAKE TWO DIMENSIONS OF THE CAST — OR THE MOUTH

SPIN THE DIAL TO FIND THE MOLDS THAT ARE DIMENSIONALLY CORRECT FOR THAT MOUTH

MAKE YOUR SELECTION FROM THE PICTORIAL GUIDE

MAIL THIS COUPON for your copy. Without cost or obligation, the Instant Mold Selector will be mailed to you through the courtesy of your Vitallium Laboratory. Mail to Austenal Laboratories, Inc., 5932 Wentworth Ave., Chicago 21, Illinois.

IT'S NEW . . . TIME-SAVING . . . REVOLUTIONARY

When you select Micromold Teeth, whether porcelain or plastic, you can specify them through your Vitallium Laboratory in your city or area.

AUSTENAL LABORATORIES, Inc.

NEW YORK **CHICAGO**

® By Austenal Laboratories, Inc.

Mail this coupon today

Without cost or obligation, the Instant Mold Selector will be mailed to you through the courtesy of your Vitallium Laboratory. Mail to Austenal Laboratories, Inc., 5932 Wentworth Ave., Chicago 21, Illinois.

DR._____

STREET_____

CITY_____ STATE_____

YOUR LABORATORY_____

ADA

CO-RE-GA

The manufacturers of CO-RE-GA denture adhesive are . . . . Conscious of their obligation and . . . . Faithful to quality.

CO-RE-GA IS NOT ADVERTISED TO THE PUBLIC

Accepted
COUNCIL ON DENTAL THERAPEUTICS
AMERICAN DENTAL ASSOCIATION

Mail this coupon for your supply of professional samples

Dr. _____

Address _____

City _____ Zone _____ State _____

CO-RE-GA CHEMICAL COMPANY

75 Mill Road • Jersey City 2, New Jersey

Something *NEW* for the Busy Dentist

The busier you are — the more useful these *new books* will be to you!

Latest information concisely presented step-by-step

Textbook of Operative Dentistry—New Third Edition

By Wm. H. O. McGehee, D.D.S., Harry A. True, D.D.S. and E. Frank Inskipp, D.D.S.

A famous and popular book completely revised and brought up-to-date to help you—the modern practitioner. You will find it indispensable because it covers one of the most important parts of your practice—operative dentistry.

It includes the basic facts on diagnosis, prevention, treatment, cavity preparations and restorations with amalgam, gold foil, cast gold, porcelain and acrylic inlays.

The new section on the present-day concepts of the use of gold foil inlays is attracting much favorable attention. The clear directions and step-by-step methods given are extremely helpful in improving your technic and in learning new methods of using gold foil. This section has been prepared by Dr. True, a recognized authority on the use of gold foil and a leader among those developing new technics for use of this versatile material.

Test the practical usefulness of this book! Read the chapters on instruments and instrumentation, the chair and operating positions, the arrangement and ideal working conditions of the dental office, and the role of the dental assistant in operative dentistry. This information will help you now, *today*. You will be a better dentist, more efficient, more capable—better equipped to serve more patients. **$10.00**

Textbook of Periodontia—New Third Edition

Edited by Samuel Charles Miller, D.D.S.

Full of up-to-date information—easy to find, to read, to use. The complete indexes help you find what you want; the style is clear, concise and readable; the technics are complete and easy to follow.

Look for these additional features:

- presents detailed methods for the equilibration of occlusion
- tells you how to present and explain the problems of periodontia to the patient
- discusses instrumentation for conservative and surgical treatment of periodontal pockets—six operations with full details—step-by-step methods written by the originators of each recognized technic
- 48-page Glossary—568 illustrations, some in color—photographs, drawings, roentgenograms
- a post-graduate course in periodontia for the active dentist.....**$11.50**

Miller's Oral Diagnosis and Treatment—Second Edition

Reviewers say: "of unusual value and interest to all practitioners"—"a desk companion for every dentist"—"a valuable addition to any library, institutional or personal".....**$10.00**

Use This Handy Coupon to Order Your Copies

The Blakiston Company
1012 Walnut Street
Philadelphia 5, Pa.

The Blakiston Company
1012 Walnut Street, Philadelphia 5, Penna.

Please send me the following books: ☐ my check is enclosed; ☐ charge my account. It is understood that you will credit my account for any book if I wish to return it within 10 days.

- ☐ McGehee, True and Inskipp's TEXTBOOK OF OPERATIVE DENTISTRY—$10.00
- ☐ Miller's TEXTBOOK OF PERIODONTIA—$11.50
- ☐ Miller's ORAL DIAGNOSIS AND TREATMENT—$10.00

Name .....

Address .....

City ..... Zone ..... State .....

J.A.D.A. 12-50

MANY
campaigns
in ONE
GIVE ENOUGH FOR ALL!

Samophen

ANTISEPTIC SOAP

Regular use of SAMOPHEN Antiseptic Soap reduces and keeps your hands surgically clean. Wash your hands today, and they'll be cleaner tomorrow, too.

SAMOPHEN does everything other soaps can do—and, because it contains 3% hexachlorophene, gives you these outstanding advantages:

- 36% more effective* than 3½% tincture of iodine
- Cumulative antibacterial action from routine use
- Non-irritating, non-coagulating, non-toxic

SUPPLY: Individually wrapped four and eight-ounce cakes also in bottles of one pint. Ask your dealer about the attractive quantity terms.

For your copy of the brochure presenting clinical and laboratory evidence of SAMOPHEN's efficacy, please write to JOHNSON & JOHNSON Dental Division, New Brunswick, New Jersey.

Recognized by patients · Relied on by dentists

*Tested against mixed cultures of Staph. aureus, Strep. hemolyticus and E. coli

THE 1951 A. D. A. APPOINTMENT BOOK

IS NOW AVAILABLE

If you aren't already on the standing order list, send in your order today.

EXCLUSIVE FEATURES

- ★ **A full week's appointments at a glance**
- ★ **Patient recall system**
- ★ **Catalog of library books**
- ★ **Catalog of dental health educational literature**
- ★ **National holidays**
- ★ **List of acceptable local anesthetics**
- ★ **List of certified dental materials**

Use This Order Blank

American Dental Association
222 E. Superior Street
Chicago 11, Illinois

Check the order you wish to place:

☐ Place my name on the standing order list to get the A.D.A. Appointment Book regularly each year beginning with the 1951 edition and bill me for $1.50. I understand this order is cancellable at any time.

☐ Just send me a copy of the 1951 book and bill me for $1.50.

Signed.....

.....
No. Street

.....
City Zone State

announcing . . . .

THE SECOND EDITION OF THE AMERICAN DENTAL DIRECTORY

Available Now

- Lists more than 80,000 dentists alphabetically and geographically including street address, city and state.
- Shows general practitioners and specialists.
- Indicates dental school attended and date of graduation.

Included in this great directory is every dentist whose name can be verified. Invaluable for referring patients, looking up friends and classmates.

Should be on the desk of every dentist and everyone who does business with dentists.

FILL IN AND MAIL TODAY

AMERICAN DENTAL ASSOCIATION
222 East Superior Street, Chicago 11, Illinois

Please send me a copy of the new A.D.A. Directory. Enclosed is my remittance of $12.50.

Signed .....
Please Print or Type

Street .....

City ..... Zone .... State .....

YOUR TEETH...

how they grow

is now available

A PAMPHLET for use in the dental office and schoolroom . . . to help the dentist and the teacher present dental health information on . . .

- Number of teeth
- Function, shape, structure
- Development
- Care of the teeth

Prices

25 copies	$3.37
50 copies	5.80
100 copies	9.93

A sample copy on request

AMERICAN DENTAL ASSOCIATION

222 East Superior Street **Chicago 11, Illinois**

no heat.. no warpage

The problem of warpage in denture repairing and relining is solved, once and for all, with NUWELD.

Because NUWELD requires no heat, dentures processed by the NUWELD method are free from warpage. Case after case offers convincing clinical proof of this important advantage.

NUWELD brings other advantages as well. Among them:

It acts with certainty and dispatch, saving valuable time for the laboratory, for the dentist, for the patient.

It closely matches the color of the original denture (available plain and mottled).

It is permanent in results. NUWELD molecules virtually interlock chemically with those of the denture base itself.

in denture repairs and relines

NUWELD

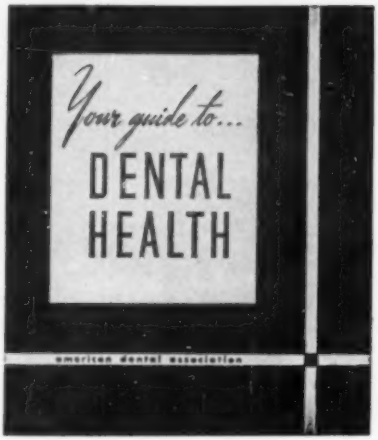
For modern materials call on CAULK Milford, Delaware

Caulk

Your Guide to DENTAL HEALTH

WRITE FOR YOUR SAMPLE COPY TODAY

Discusses 27 subjects concerning which questions are frequently asked:



Why we have teeth	Abscess
Structure and shapes	Dead tooth
Primary teeth	Gingivitis
Permanent teeth	Vincent's infecton
Dental hygiene	Pyorrhea
Toothbrushing	Halitosis
Dentifrices	Cold sore
Mouthwashes	Canker sore
Other dental products	Cancer
Sodium fluoride	Occupational hazards
Diet and nutrition	How to select a dentist
Dental caries	Responsibilities of the dentist
Systemic conditions	X-ray examination

Artificial dentures

Prices: **25 copies, $2.95; 50 copies, $5.00; 100 copies, $8.60**

AMERICAN DENTAL ASSOCIATION

222 East Superior Street Chicago 11, Illinois

New... PRE-TESTED Impression Powder

For Added SAVINGS . . . . Buy it in Volume-Users ECONOMY PACKAGE

You'll be amazed at the remarkable accuracy, speed and economy of Getz NEW patent pending formula Impression Powder. Now offered to you only after rigid tests by leading laboratories and institutions. Judged to meet every requirement of accuracy in precision techniques. Easy to use too . . . with ordinary TAP WATER . . . without tablets or capsules. Won't deteriorate. Buy it in the Economy container. $8.00 value only $3.50 . . . enough for 30 to 35 impressions. 3 cans $10.00. 12 cans $36.00. Order from your dealer today.

BUY IT AT OUR RISK! IF NOT 100% SATISFIED RETURN UNUSED PORTION FOR FULL CREDIT.

THE WILLIAM GETZ CORPORATION
DENTAL PRODUCTS
7512 GREENWOOD AVE. • CHICAGO 19, ILLINOIS

CLASSIFIED ADVERTISING

Forms close on 25th of second month preceding month of issue

Remittance Must Accompany Classified Ads.

Advertisements cost $3.50 not exceeding 30 words, additional words 10c each. Commercial agency advertisements, $3.50 for 20 words, additional words 13c each. Publisher reserves the right to determine classification. An extra fee of 25c is charged advertisers who have answers sent care of A.D.A. and in such cases we do not furnish name or address to inquirers. This rate applies for each insertion.

PRACTICES FOR SALE

FOR SALE—Immediately or after association, large practice in largest Southern Ohio city, grossing well over $20,000 per year. Connected living quarters available for rental if desired. Very beautiful office, two operating rooms. Price $5,000, liberal terms. Address A.D.A. Box 193.

●

FOR SALE OR RENT—Practice and equipment in Northwest Iowa town. Trade area population 3,000; no other dentist. Reason for selling: entering military service. Address A.D.A. Box 205.

●

FOR SALE—Bungalow type office with or without equipment, in suburb of Chattanooga, Tennessee. Seven rooms, plus four utility and supply rooms. Fine practice, established 11 years, good income and reputation. Excellent opportunity. Reasonable. Address A.D.A. Box 173.

●

FOR SALE—Established practice in fast-growing resort area, Northern Wisconsin. Serving large territory; no competition; year round business. New bungalow office, modern equipment. Best hunting and fishing in the North Woods. Reason for selling: ill health. Address A.D.A. Box 213.

●

FOR SALE—Two chair dental office, fully equipped. Ritter units, x-ray and laboratory equipment. Reason for selling: will be called to military service. Address A.D.A. Box 214.

LOCATIONS AVAILABLE

FOR RENT—Well planned dental office. 100% location, industrial city; population, 18,000. Four leading highways connect wide trading, prosperous rural community. City without its quota of dentists. Excellent opportunity. Address A.D.A. Box 225.

●

FOR SALE—Near Detroit, Michigan, beautiful ranch-type home on St. Clair River. Two lovely offices, modern plumbing, ideal for dentist. Home separated from offices by hall; six rooms, including three bedrooms, two baths; two car garage. $35,000. Write T. M. Tucker, Algonac, Mich.

●

FOR RENT—Three room office on prominent corner, near schools. Ideal location. Adjacent home if desired. S. M. Dingwall, 7477 Girard Avenue, La Jolla, Calif.

●

FOR RENT—Dental office, excellent location, Beverly Hills section of Chicago. Northeast exposure. Well established as successful dental office for nearly fifty years. Contact D. N. Lane, 1917 W. 111th St., Chicago, Illinois. Phone Beverly 8-0671.

●

FOR RENT—Office space, ideally situated. New building. Lovely college town. Address G. F. Hogan, 71 N. Pleasant St., Amherst, Mass.

FOR RENT—Three chair, fully equipped dental suite in Clinic-Hospital group. Percentage receipts either gross or net. Long established general practice being discontinued. Available only for specialty—Orthodontia, Children's Dentistry, Exodontia, Oral Surgery or Periodontia. Services of M.D., D.D.S., as consultant and anesthetist available from hospital-medical side. Michigan registration mandatory. Dearborn Clinic & Diagnostic Hospital, 4840 Maple, Dearborn, Mich.

●

FOR RENT—Unequipped two-chair dental suite. Laboratory, dark room, etc. Private entrance; established location, residential town. Experience desirable; excellent opportunity. Address P. O. Box 56, Ridgefield, Conn.

●

FOR SALE—San Diego dental suite. Two operating rooms, private office, laboratory and reception room. Centrally located in downtown San Diego. Partitions, plumbing, fluorescent lighting, music, rug and mirror. $1200. Lease available. Write Dr. W. P. Hansen, 1648 5th Avenue, San Diego 1, Calif.

OPPORTUNITIES AVAILABLE

WANTED—By philanthropic foundation, dentists under 40 years of age for public health work. Starting salary rate $4,500 per annum. Michigan licensure not required provided the individual is a graduate of an accredited dental school and is licensed in another state. For detailed information write Kenneth R. Gibson, D.D.S., M.S.P.H., Director, Children's Fund of Michigan, 660 Frederick St., Detroit 2, Mich.

●

WANTED—Hygienist. Excellent opportunity in newly equipped bungalow office one block off the University of Oklahoma campus. Write Dr. John B. Cole, 706 Asp Avenue, Norman, Oklahoma.

●

WANTED—Indiana dentist to operate going practice, doing $18,000 to $20,000 gross, with opportunity to buy. New Ritter x-ray, two Ritter motor chairs. Well equipped and recently modernized office. Will consider trade for small town practice. Address A.D.A. Box 216.

●

WANTED—Woman dentist under 35 to become associated with Orthodontist. Previous orthodontic experience not necessary. Excellent opportunity. Desirable surroundings. Midwest. Address A.D.A. Box 217.

●

WANTED—Urgent need for dentist in ideal location in above-average income area in Cincinnati. New building ready for occupancy January 1, especially built by a physician for himself and one dentist. First floor, center of business district. Assured high income. Need only to provide equipment. Contact Medical-Dental Management of Cincinnati, 24 E. 6th St., Cincinnati 2, Ohio.

WANTED—Resident in Oral Surgery and Dental Intern. Beginning July 1, 1951. Applicants for residency must have postgraduate or previous hospital training. Recent graduate accepted for internship. Training in all surgical and related subject. Applicants must be graduates of accredited dental schools. Approved by A.D.A. Address Executive Director, Sinai Hospital, Baltimore 5, Md.

•

DENTIST—Needed in prosperous industrial community. Three room modern suite available December 1st in Medical Center Building. Good opportunity to build a practice. Direct replies to R. H. Puumala, M.D., Cloquet, Minnesota.

OPPORTUNITIES WANTED

DENTIST—D.M.D. '49, age 25, wishes general internship, school, etc., beginning October '51. New England preferred. 1 year's experience Public Health; 1 year Norwegian Naval Dental Corps; 2 years part time limited dental research. Married. Address A.D.A. Box 218.

•

DENTIST—Seeks suitable location in Florida. Available December 10, 1950. Graduate N. U. Dental School, 1945. Florida license. 23 months active service in U. S. Army. Interested in buying used equipment or active dental practice. Will consider association. Address A.D.A. Box 219.

PHYSIOLOGIST — Pharmacologist, male, Ph.D., experienced publications, special work on dental subjects, desires position on dental school faculty. Address A.D.A. Box 220.

•

WANTED TO BUY—Established dental office, preferably modern bungalow office and home combined, in clean town or city in Pennsylvania. Address A.D.A. Box 221.

•

WANTED—Recent graduate University of Minnesota desires association in Palo Alto-San Jose area in Northern California. Address A.D.A. Box 222.

•

WANTED TO BUY—One or two chair practice in New York State (but not in New York city). Will consider establishing practice in town needing the services of a dentist. Address A.D.A. Box 223.

MISCELLANEOUS

WANTED—Old Dental Books—Orthodontia Journals; Old Dental Prints—Advertisements. Leo L. Bruder, 1 de Kalb Avenue, Brooklyn, N. Y.

Ann Woodward, Director
Woodward Medical Personnel Bureau
185 N. Wabash Avenue
Chicago 1, Illinois

OPPORTUNITIES AVAILABLE

D-147—DENTIST: young, must have internship and/or residencies. Rapidly developing Southwest Medical Center, all fields of medicine and dentistry covered. $5,000 up to start, paid vacation, advancement assured.

•

D-149—TEACHING APPOINTMENT: University school of dentistry, Southwest, salary and rank open, **must** have previous teaching experience.

•

D-153—ORAL SURGEON: to associate as junior partner with renowned Chicago specialist. Must be well qualified, under 45. Wonderful practice, Dr. contemplating retirement few years.

•

D-160—DENTIST: for Eastern Corporation, Executive or sales work, with or without investment. Must have previous dental-administrative-business experience. Remuneration open.

•

D-157—CERTIFIED ORAL SURGEON: to associate with excellent medical group composed of individual practices. Group covers 8 specialties. Washington.

•

D-158—SALE OF PRACTICE: Established 4 years in New York community of 32,000. Yearly income past 3 years $10,500, price $4,000 complete. Leaving to specialize in N. Y. C.

•

D-166—PEDODONTIST: to take over children's work of unopposed established practice. Present man will remain and specialize in Orthodontics. Splendid Florida location. Percentage arrangement—no expenses borne by incoming man. Can make $20,000 to $30,000.

•

D-168—PEDODONTIST: Associate with Oral Surgeon and Periodontist. High-class practice. Last Pedodontist grossed $35,000 his second year. Leading Southwest city. Mild climate, ideal recreation and living conditions.

D-170—DENTIST: for California medical group of Mayo trained men covering 7 specialties. Now installing complete dental department. 50% of work is industrial, 50% clinical, or may maintain private practice ½ time if desirable. No investment necessary—must be in thirties. Outstanding opportunity.

•

D-175—DENTIST: to direct State Dental Program. M.P.H. degree or administrative public health experience. Salary $6,000 to $7,500 plus per diem additional allowances.

•

D-178—DENTIST: general or periodontia, not over 35. Associate with Chicago dental group. 3 Dentists housed in neat, attractive, bungalow office representing $80,000 investment. Remuneration on a percentage or straight salary basis, should approximate $6,000 first year.

•

D-180—PUBLIC HEALTH DENTIST: $7,800 to $9,000 plus traveling expenses. M.P.H. degree desirable. Must be capable of supervising State Dental Health Program.

•

D-187—MUNICIPAL DENTIST: Island possession of United States. Vacation, sick-leave, paid transportation, mild tropical climate, Air service to U.S. Licensure by examination only.

•

D-191—DENTIST: assist established man in his own new building. Mostly children patients; some general work. Percentage arrangement should net new man $700 to $900 per month, based on actual earnings of present associate. Pacific Northwest city of 100,000.

•

D-192—ORAL SURGEON or GENERAL DENTIST: assist American Board man with his busy practice. Salary or percentage remuneration. Pennsylvania city of 50,000.

Woodward Medical Personnel Bureau (cont'd)

D-193—DENTIST: Established 17 years in Chicago seeks associate to assist him with large practice. New dental studio will be completed end of 1950. Percentage of income should total $700 per month to start.

•

D-194—PEDODONTIST: to take over established practice of deceased dentist. Widow is dental hygienist and will assist new man in getting established. Office grosses $20,000 to $25,000. Very reasonable investment required. Ohio city.

•

D-195—ORAL SURGEON: to associate with qualified group now expanding. Must be well trained. New bungalow office, fully equipped, employs 2 nurses, 2 technicians, Salary plus percentage of net. Vicinity Bridgeport, Connecticut.

OPPORTUNITIES WANTED

(a) ORAL SURGEON: seeks new location. 18 years experience in private practice, military and industrial work. Eligible for American Board Certification. Exempt from military service.

(b) PEDODONTIST: BS, DDS degrees, will receive MS in Children's dentistry in February. Age 32. Seeks association with another dentist, group affiliation, or teaching appointment.

•

(c) PEDODONTIST or ORTHODONTIST: Age 40, DMD Harvard, several PG courses in leading schools. 14 years successful private practice.

•

(d) GENERAL DENTIST with 13 years experience in private practice and 14 years experience in industrial work seeks salaried position.

•

(e) PERIODONTIST: BS and DDS State University, internship, 4 years Army dental officer, 12 years private practice, desires an association in West or South.

•

(f) ORAL SURGEON: Age 34, DMD and BS state university. Just completed 3 year fellowship at Mayo Foundation. Will consider any type of appointment in Oral Surgery.

•

(g) ORAL SURGEON: Young man with M.S. and 2 years hospital staff experience desires to relocate. Also experience in Orthodontia and Prosthodontia.

Burneice Larson, Director
The Medical Bureau
Palmolive Building
Chicago 1, Illinois

OPPORTUNITIES AVAILABLE

WANTED—(a) Dentist to join department of dentistry, health department, public schools; Midwest.

•

(b) Experienced dentist for pedodontics or general practice; four-chair office; college town, New York state.

•

(c) Orthodontist; permanent association; busy practice; New York City.

•

(d) Dentist for institutional position, large state hospital; beautiful location; five-room apartment available: $425, single maintenance $40, maintenance for dentist and family $80; West.

•

(e) Orthodontist to become associated with specialist located in university medical center; income first year around $6500, early partnership.

•

(f) Dentist to perform operative dentistry in school program; four hours daily; ten-month year; winter resort city of 100,000; Southwest.

•

(g) Pedodontist to take over well established practice, university town, Midwest.

•

(h) Public health dentist; tropical islands.

•

(i) Orthodontist to take over well established practice; town of 45,000, California.

•

(j) Associate; general practice; college town, Massachusetts.

•

(k) Dentists qualified teaching for following departments; peridontology, operative dentistry, crown and bridge, general and oral pathology, denture prosthesis.

(l) General practitioner interested in children's dentistry; association with two dentists, long established, Chicago area.

•

(m) Specialists in prosthetics, oral surgery and pedodontics, certified or eligible, and, also, several general practitioners; dental department recently established in connection with prepaid medical clinic; department operated on fee-for-service rather than prepaid plan; complete dental service provided; approximately 18,000 members.

•

(n) Oral surgeon to become associated with dentist, well established in Pittsburgh area.

•

(o) Dentist to locate in small town in Idaho, trade area of 1200; summer population considerably greater.

•

(p) Assistant by dentist established forty years; university center, East; partnership, opportunity to inherit practice.

•

(q) Associate; general practice; early partnership; fairly large town, Illinois.

•

(r) Long established practice limited to oral surgery; Middle Western metropolis.

•

(s) Michigan licensed dentist to take charge of three-chair dental department.

•

(t) Dentist to join staff of dental service having state-wide service; duties those encountered in any well regulated private practice; excellent facilities; full-time seven-hour day, five day week; should be interested public health or children's dentistry.

The Medical Bureau (cont'd)

(u) Full time hospital appointment; New York.

•

(v) General practitioner qualified pedodontics, crown and bridge; group appointment; Ohio.

•

(w) Dentist to direct state program of dental health education; graduate training or experience in public health dentistry desirable; $7200 increasing to $8400.

•

(x) General practitioner; group appointments; salary $8,000 dependent upon qualifications; West.

•

(y) Assistant; dental department, large state hospital; duties: general practice with prostheses; college town of historic interest; Southeast.

WANTED

(a) Hygienist; hospital appointment; New York.

•

(b) Dental hygienist by oral surgeon; college town, Pacific Northwest.

•

(c) Dental hygienist; dentist long established in Pennsylvania.

•

(d) Hygienist to conduct dental education program; state department of health; Southeast.

OPPORTUNITIES WANTED

Young dentist wishes association in general practice; B.A.; D.D.S., eastern schools; licentiate, National Board of Dental Examiners.

Dentist with several years experience on staff of state hospital is available for institutional appointment; three years' general practice.

•

Dentist trained, experienced, public relations; eight years' successful practice; teaching, writing experience; prefers position, administrative character involving public relations.

•

Orthodontist; B.A., D.D.S., Columbia University; internship in orthodontia and oral surgery, teaching hospital; two years' graduate training in orthodontia for which he received M.S. degree.

•

Oral surgeon; B.A., D.D.S., M.S. (Oral Surgery); several years' successful general practice before specializing; eligible for American Board.

•

Pedodontist; now completing two and half years' graduate training in pedodontia; two years' general practice before specializing.

•

Prosthodontist; A.B., D.D.S., western university; recently completed two years' graduate training in prosthetic dentistry for which he received Master's degree; has applied for examination, American Board of Prosthodontia; successful general practice before specializing.

•

Public health dentist; eight years, private practice of general dentistry, simultaneously serving as director, dental clinic, public schools; two years, public health dentistry for children, state department of health.

Make this a truly

Merry Christmas!

Write for our price list of quality golds and silver filling alloys.

Your gold scrap will help pay for a Merrier Christmas, filled with good cheer . . . and you'll get maximum returns when you send it to

Mowrey's

Check sent before Christmas on all shipments received by Dec. 19.

Our careful grading and assaying assure your complete satisfaction.

Since 1899 no better refiners than

W. E. Mowrey Company

1435 W. University Ave. St. Paul 4, Minn.

Triumph

OF MODERN DENTISTRY

but . .

the beautiful new denture must be steadily *used* by the patient during the first critical weeks, if adaptation is to be successfully achieved.

Particularly in the presence of anatomical or psychological difficulties, Wernet's Powder can help to keep the denture out of the bureau drawer, and in the patient's mouth . . . by providing a soft, resilient cushion that improves retention and stability . . . stimulates confidence . . . and accelerates complete mastery of the new prosthesis.

The coupon will bring a complimentary office supply.

Wernet Dental Mfg. Co., Inc.
Jersey City 2, N. J.

WERNET DENTAL MFG. CO., INC.
Jersey City 2, N. J.

Please send me, without cost, an office supply of Wernet's Powder.

Dr._____

Address_____

City_____ State_____

3Y

WERNET'S POWDER

WERNET DENTAL LORE

DECEMBER 1950

The impact of the depression of 1933 on dental practice is indicated by the fact that the five hundred million dollars spent annually for dental care between 1929 and 1931 *shrank* in 1933 to two hundred and ninety-four million dollars.

• • •

Among the first 2,000,000 men called by Selective Service in the last war, 20.9 per cent of the rejections were due to dental deficiencies (the greatest single cause of rejection)—although the criterion for acceptance required only three pair of matching incisors and three pair of matching chewing teeth.

• • •

Billiard balls are a far cry from artificial dentures—yet it was the work of John Wesley Hyatt in 1868, looking for a substitute for ivory in the manufacture of billiard balls, that first led to the preparation of an organic plastic—an invention that paved the way for the perfection of the modern acrylic resins, the first of which was introduced in 1937.

• • •

Under ancient Hebraic Law, the loss of a tooth was taken most seriously; if a slave's tooth were broken by his master, he was compelled to be set free because of his misfortune.

• • •

Modern dental education began back in 1776, when James Rae, Surgeon of the Surgeons Company in Edinburgh gave a series of lectures on dentistry "To rescue that department from ignorant and unskilled hands."

• • •

Prosthetics has long commanded special interest by the dental profession; the first book on the subject "Prosthetic Dentistry", written by Dr. Deboire, was published about 1805.

• • •

India supplies the karaya gum used as the base in most adhesive powders. The gum exudes from a gash in the side of a tree named the Cochlospermum religiosium—only the pure clean gum that is not contaminated with the bark or dirt of the trunk of the tree is used in the preparation of Wernet's Powder.

Speeds the Mastery of the Denture

INSURANCE

FOR DENTISTS, PHYSICIANS, SURGEONS EXCLUSIVELY
Accident • Hospital • Sickness

Cost has never exceeded amounts shown

$5,000.00 ACCIDENTAL DEATH $25.00 weekly indemnity, accident and sickness	**$8.00** Quarterly
$10,000.00 ACCIDENTAL DEATH $50.00 weekly indemnity, accident and sickness	**$16.00** Quarterly
$15,000.00 ACCIDENTAL DEATH $75.00 weekly indemnity, accident and sickness	**$24.00** Quarterly
$20,000.00 ACCIDENTAL DEATH $100.00 weekly indemnity, accident and sickness	**$32.00** Quarterly

Also hospital expense for members, wives and children at small additional cost

85c out of each $1.00 gross income used for members' benefit

$3,500,000.00
INVESTED ASSETS

$16,500,000.00
PAID FOR CLAIMS

$200,000.00 deposited with State of Nebraska for protection of our members

Disability need not be incurred in line of duty—benefits from the beginning day of disability

PHYSICIANS CASUALTY ASSOCIATION
PHYSICIANS HEALTH ASSOCIATION

48 years under the same management

400 FIRST NATIONAL BANK BUILDING **OMAHA 2, NEBRASKA**

UBECO SANITARY CROWN and BRIDGE TRAYS

Ubeco Sanitary Trays are made of nickel-plated spring steel, in two parts—handle and detachable cup. Why clean trays when bright, new ones can replace them at slight cost.

100 Cups and 1 Handle	$4.50
24 Cups and 1 Handle	1.25
Extra Stainless Steel Handles, ea.	.30

UNION BROACH CO., INC.
37 WEST 20th STREET NEW YORK 11, N.Y.

UNION SECTIONAL TRAYS
For Split Impressions

No jig-saw puzzles! Sections come out clean and in 1 piece, in a horizontal line, taking an exact impression of the teeth. $2.50 a box of 12 Pairs of Sections and 1 Universal Crown and Bridge Tray.

No. 1 — Straight No. 2 — Curved

Also available for partial impressions—small, medium and large, upper and lower, $3.50. Right and left, $2.50 each.

Sold by Better Dealers Everywhere

UNION BROACH CO., INC.
37 West 20th Street, New York 11, N. Y.

Announcing

NEW 1950 YEAR BOOK of DENTISTRY

Edited by

Tylman, Keys, Knutson, Moore, Robinson and Waldron

• • • • •

THE EASY, ECONOMICAL WAY TO KEEP UP TO DATE

Presented in a new, more readable, more distinguished format, the *1950 Year Book of Dentistry* will shortly be in the hands of thousands of dentists who rely on it as THE source of latest advances in dental diagnosis and treatment.

More than 600 pages and some 400 illustrations combine to bring you important new technics and worthwhile refinements of standard measures.

The Year Book is preferred reading because its concise, brief style gives you *the essence of hundreds of journal articles*, most of which you would not otherwise have time to read. Its scope is comprehensive, covering oral pathology, oral medicine, operative dentistry, oral surgery, prosthetics, orthodontics and public health. *Of special assistance are the editors' personal comments*—authoritative guidance of incalculable value in applying the methods and facts described.

***Journal of the American Dental Association* describes it as "A 'must' in every dentist's library. Enables him to keep abreast with progress in his profession."**

Edited by Stanley D. Tylman, D.D.S., Donald A. Keys, D.D.S., John W. Knutson, D.D.S., George R. Moore, D.D.S., Hamilton B. G. Robinson, D.D.S. and Carl W. Waldron, M.D., D.D.S. 672 pages, 410 illustrations. $5.00.

----------Send Today for Your Approval Copy!----------

50th Anniversary

The Year Book Publishers, Inc., JADA 12-50
200 E. Illinois St.,
Chicago 11, Ill.

Please send, postpaid, for 10 days' free examination

☐ New 1950 Year Book of Dentistry, $5.00

Name _____ Street _____

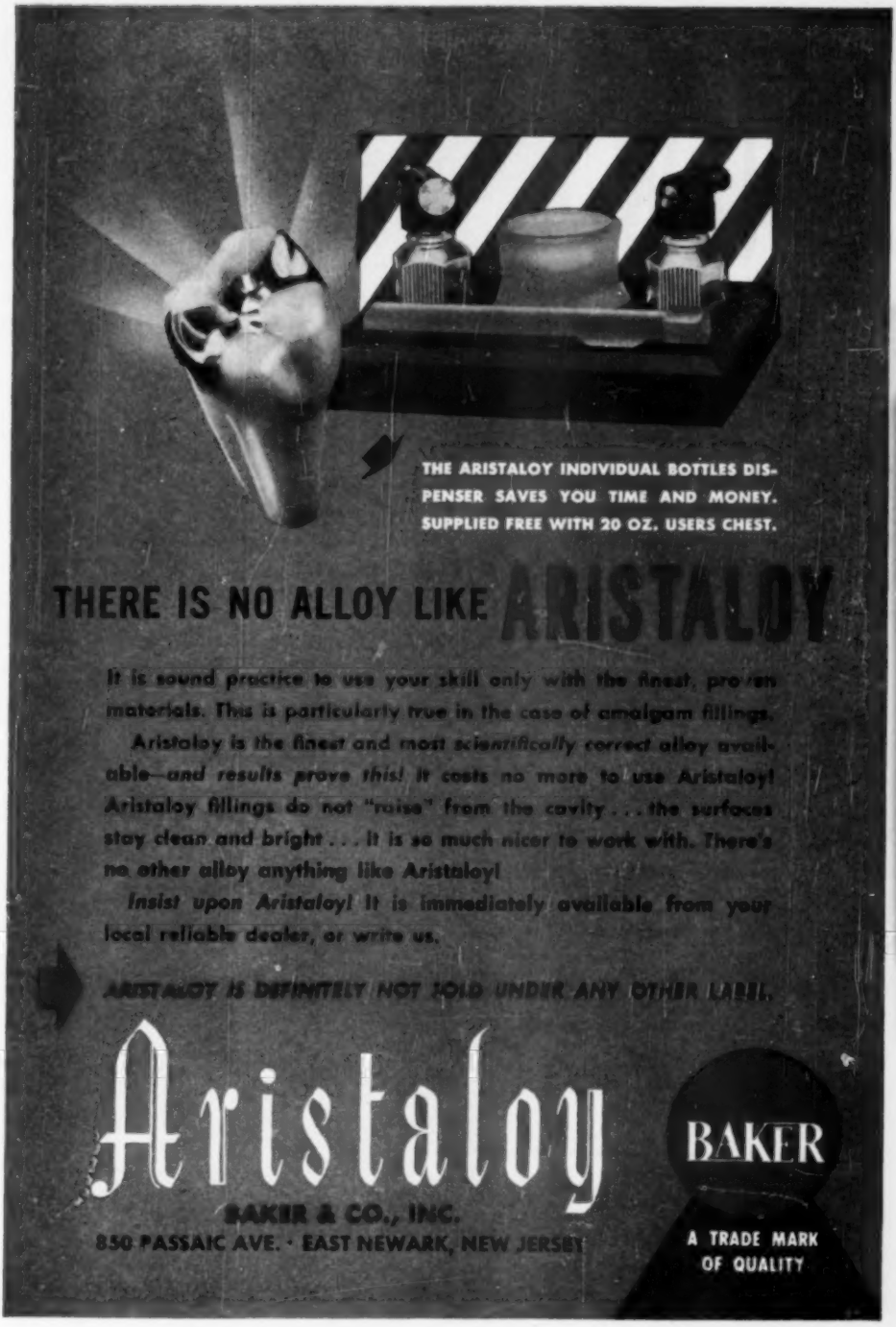
City _____ Zone _____ State _____

The CAL-LAB near your office is one of a group of carefully selected laboratories extending from coast to coast. Selected by other members of the CAL-LAB group for its readiness and competence to render an unlimited service. Unlimited not only in the sense that the service is complete, but more fundamentally because the service is unfettered by bonds of politics, and because it is qualitative in every step of construction, ethical in every respect. To *you*, one of the outstanding advantages of Cal-Lab service is the untiring efforts of its Central Research Organization and the limitless imagination of its scientists whose task it is to improve the quality and standards of laboratory procedure and materiel. For better service today and tomorrow, call your Cal-Lab.

CERTIFIED ARMS LABORATORIES
cal
SERVICE
REG. U.S. PAT. OFF.

The **CAL-LAB** Group

Do you read CAL magazine?
Ask your CAL-LAB to send it to you!


THE ARISTALOY INDIVIDUAL BOTTLES DISPENSER SAVES YOU TIME AND MONEY. SUPPLIED FREE WITH 20 OZ. USERS CHEST.
THERE IS NO ALLOY LIKE ARISTALOY
It is sound practice to use your skill only with the finest, proven materials. This is particularly true in the case of amalgam fillings.
Aristaloy is the finest and most scientifically correct alloy available—and results prove this! It costs no more to use Aristaloy! Aristaloy fillings do not "raise" from the cavity . . . the surfaces stay clean and bright . . . it is so much nicer to work with. There's no other alloy anything like Aristaloy!
Insist upon Aristaloy! It is immediately available from your local reliable dealer, or write us.
ARISTALOY IS DEFINITELY NOT SOLD UNDER ANY OTHER LABEL.
Aristaloy
BAKER & CO., INC.
850 PASSAIC AVE. · EAST NEWARK, NEW JERSEY
BAKER
A TRADE MARK OF QUALITY

NEW.

Surgical Cuspidor shown above, standard cuspidor below.

Ritter Units with SURGICAL CUSPIDOR

● Now you can have a Ritter Unit equipped with a Surgical Cuspidor *at no extra cost.* Units equipped with this Surgical Cuspidor offer greater cleanliness in use . . . positive suction in sufficient volume for the general practitioner as well as the oral surgeon. Be sure to see these Ritter Units on display at your dealer.

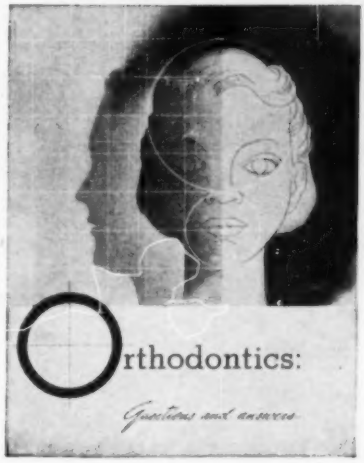
NEW greater volume of suction available from 0 to 25" of mercury. Easy-to-read precision gauge mounted right in front.

NEW drains directly into waste. No unsightly blood, mucous, etc., in cuspidor bowl. No unpleasant bottle to empty or clean. No strainers to clean or foul up.

NEW finger-tip valve control of vacuum. Tubing easily cleaned by flushing directly from special spigot.

EQUIPPED with standard saliva ejector tip and aspirator handle with tips.

Announcing . . .



A NEW PAMPHLET on ORTHODONTICS

Produced by the Council on Dental Health after consulting with recognized authorities in the field of orthodontics.

Orthodontics answers many of the questions commonly asked by parents about the child who needs orthodontic care. It presents information on:

- Healthy and attractive teeth as an asset
- Prevalence of malocclusion
- Causes of malocclusion
- Prevention or correction of malocclusion
- Factors governing treatment

—PRICES—

25 copies	$1.50
50 copies	2.50
100 copies	4.35

A SAMPLE COPY ON REQUEST

AMERICAN DENTAL ASSOCIATION

222 East Superior Street Chicago 11, Illinois

INDEX TO ADVERTISEMENTS

December 1950

Abbott Laboratories A-12
American Dental Association A-9, A-22, A-23, A-36, A-46, A-47, A-48, A-50, A-63
Austenal Laboratories A-40, A-41

Baker & Co. A-61
Blakiston Co. A-43
Bristol Myers Co. A-5

Caulk Co., L. D. A-49
Childs Mfg. Co. A-35
Classified Advertising A-52, A-53, A-54, A-55
Coe Laboratories A-60
Columbia Dentoform Corp. A-8
Columbus Dental Mfg. Co. A-24
Commercial Solvents Corp. A-2
Community Fund A-44
Cook-Waite Laboratories A-38, A-39
Corega Chemical Co. A-42
Cosmos Dental Products, Inc. A-20, A-21
Crescent Dental Mfg. Co. A-9
Cross Emblem Co. A-3

Dee Division, Handy & Harman A-1
Dental Perfection Co. A-34
Dentists' Supply Co. of N. Y. ..... 2nd Cover
Dentists' Supply Co. of N. Y. ..... 4th Cover
Dresch Laboratories A-15
Dunhill of London, Alfred A-3
Durallium Corp. A-29

Eastman Kodak Co. A-13
Exakta Camera Co. A-14

Fleet Co., C. B. A-18

Getz Corp., Wm. A-51

Hudson Products Co. A-6

International Nickel Co. A-4

Jelenko & Co., J. F. A-14
Johnson & Johnson A-45

Luxene, Inc. A-10, A-11

Medical Protective Co. A-3
Mosby Co., The C. V. A-25
Mowrey Co., W. E. A-55
Myerson Tooth Corp. A-37

Novocol Chemical Mfg. Co. A-28

Pelton & Crane Co. A-19
Physicians Casualty & Health Assn. A-58
Professional Printing Co. A-7

Ritter Co. A-62
Rota-Seat Inc. A-33

Squibb & Sons, E. R. A-27
Stern & Co., I. A-31

Ticonium A-26
Toothmaster Co. A-14

Union Broach Co. A-58
U. S. Savings Bonds A-30

Wernet Dental Mfg. Co. A-56, A-57
White Dental Mfg. Co., The S. S. A-16, A-17
Whitehall Pharmacal Co. A-32

Year Book Publishers Inc., The A-59

A job to be done

Illness, accidents, and other unforeseen events each year bring hardship to an increasing number of fellow dentists —compelling them to call upon the A.D.A. Relief Fund for aid.

In order to bring even the barest essentials into the homes of needy dentists in 1951, the fund requires the support of every member of the profession. THE GOAL THIS YEAR IS $100,000. The need is great . . . your immediate contribution is vital.

WHERE YOUR MONEY GOES

One-half of your contribution to the A.D.A. Relief Fund is automatically allotted to your state society. In addition, the A.D.A. Relief Fund pays two-thirds of each grant. Your state and district societies pay the other one-third.

This Year Give More Through the A.D.A. Christmas Seal Campaign

SEND YOUR CONTRIBUTION TODAY TO THE AMERICAN DENTAL ASSOCIATION RELIEF FUND, 222 E. SUPERIOR STREET, CHICAGO 11, ILLINOIS

To conceal the art — is the art!

Appropriate selection of teeth is always more certain when you use your Trubyte New Hue Mould Guide and your Trubyte New Hue Selector Assortment. Those dentists who produce the restorations *you* admire invariably use these aids in selecting teeth for *form, size, shade* and *arrangement.*

For the best results all the time specify

TRUBYTE NEW HUE®

Also in Trubyte New Hue forms and shades

TRUBYTE® ACRYLIC TEETH